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ABSTRACT

This task analysis guide is intended to help teachers and administrators develop instructional materials and implement competency-based education in the agricultural production program. Section 1 contains a validated task inventory for agricultural production. Tasks are divided into 10 duty areas: orienting the student to agricultural production, developing leadership skills, using mechanics in agriculture, using plant science in agricultural production, managing natural resources, maintaining the home lawn, managing family resources, operating the farm as an agricultural business, producing poultry, and managing an apiary. For each task, applicable information pertaining to performance and enabling objectives, criterion-referenced measures, and suggested instructional activities and aids are provided. Tasks are arranged by worker duty area only, and the suggested task sequence list from Section 2 should be used to establish teaching order of the tasks. Section 2 provides descriptions of the agricultural production courses and suggests task sequence listings and course outlines. The instructional topics within the course content outlines have been cross-referenced with corresponding task/competency codes from the task inventory in Section 1. A bibliography is followed by a listing of additional information and resources. (YLB)

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[illegible] ANALYSES

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GUIDE APPLICATION

This task analyses guide is based on the following *Dictionary of Occupational Titles* (DOT) job titles in the occupational domain of agricultural production:

DOT Job Title	DOT Code
General Manager, Farm	180.167-018
Group Leader	180.167-022
Manager, Dairy Farm	180.167-026
Manager, Poultry Hatchery	180.167-046
Barn Boss	410.131-010
Fur Farmer	410.161-014
Livestock Rancher	410.161-018
Lamber	410.364-010
Farmworker, Livestock	410.664-010
Animal Caretaker	410.674-010
Livestock-Yard Attendant	410.674-018
Stable Attendant	410.674-022
Farmworker, Dairy	410.684-010
Sheep Shearer	410.684-014
Milker, Machine	410.685-010
Goat Herder	410.687-014
Sheep Herder	410.687-022
Poultry Farmer	411.161-018
Farmworker, Poultry	411.584-010
Laborer, Poultry Farm	411.687-018
Laborer, Poultry Hatchery	411.687-022
Poultry Debeaker	411.687-026
Bee Keeper	413.161-010
Farmer, General	421.161-010
Farmworker, General 1	421.683-010
Farmworker, General 2	421.687-010
Fish Farmer	446.161-010
Sales Representative, Animal-Feed Products	272.357-010

DOT Job Title	DOT Code
Farmer, Cash Grain	401.161-010
Farmworker, Grain 1	401.683-010
Farmworker, Grain 2	401.687-010
Farmer, Vegetable	402.161-010
Farmworker, Vegetable 1	402.663-010
Farmworker, Vegetable 2	402.687-010
Harvest Worker, Vegetable	402.687-014
Supervisor, Tree-Fruit-and-Nut Farming	403.131-010
Supervisor, Vine-Fruit Farming	403.131-014
Farmer, Tree-Fruit-and-Nut Crops	403.161-010
Farmer, Vine-Fruit Crops	403.161-014
Farmworker, Fruit 1	403.683-010
Farmworker, Fruit 2	403.687-010
Harvest Worker, Fruit	403.687-018
Vine Pruner	403.687-022
Farmer, Field Crop	404.161-010
Farmworker, Field Crop 1	404.663-010
Farmworker, Field Crop 2	404.687-010
Harvest Worker, Field Crop	404.687-014
Farmer, Diversified Crops	407.161-010
Farmworker, Diversified Crops 1	407.663-010
Farmworker, Diversified Crops 2	407.687-010
Sprayer, Hand	408.684-014
Farm-Machine Operator	409.683-010
Field Hauler	409.683-014
Irrigator, Value Pipe	409.684-010
Irrigator, Sprinkling System	409.685-014
Farmworker, Machine	409.686-010

This guide is of use in developing and selecting instructional materials and in implementing competency-based education for the following program and courses:

Program	Courses
Agricultural Production (01.0301)	Agricultural Production Technology (III) 8010
	Agricultural Production Management (IV) 8012
	Operating the Farm Business (V) 8014

Additional information concerning the application and use of this publication may be obtained from the following office:

Agricultural Education Service
Vocational and Adult Education
Department of Education
P.O. Box 6Q
Richmond, Virginia 23216

AGRICULTURAL PRODUCTION
TASK ANALYSES

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FOREWORD

In the next decade, businesses and industries in Virginia will require large numbers of skilled workers. Therefore, vocational education at the secondary and postsecondary levels will have the responsibility of preparing individuals for a variety of occupations.

Competency-based education (CBE) provides the preparation students need for entry into the Virginia work force. The CBE practice of recording competencies developed by students helps them to make a smooth transition between secondary and postsecondary programs when both levels of education are required for career training. In addition, CBE is effective in retraining workers who have been displaced because of changing technology.

This guide will assist teachers and administrators in developing instructional materials that meet the needs of students and industry and comply with the Virginia CBE standards for vocational and adult education.

S. John Davis
Superintendent of Public Instruction

Lydia M. Bell, Director
Division of Vocational Program Services

ACKNOWLEDGMENTS

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INTRODUCTION

This task analyses guide is designed to be used in combination with the Agricultural Education Service Area Resource and Agricultural Production: Task Analyses for Livestock Production in order to implement competency-based education in the Agricultural Production program. The service area resource contains information that pertains to all programs within the Agricultural Education area; the sections of that publication are entitled Occupational Information, Student Organization (Future Farmers of America), Classroom Management Systems, and Recording Systems. This task analyses guide contains the task inventory, suggested task sequence lists, and content outlines for the specific courses in Agricultural Production. Detailed instructions for combined use of these publications are contained within the service area resource.

Using the Task Analyses

Section 1 contains a validated task inventory for Agricultural Production. For each task, applicable information pertaining to performance and enabling objectives, criterion-referenced measures, and suggested instructional activities and aids is provided. Tasks are arranged by worker duty area only, and the suggested task sequence lists from Section 2 (as adapted by the local system) should be used to establish teaching order of the tasks.

Section 2 of the task analyses guide provides descriptions of the Agricultural Production courses, followed by suggested task sequence listings and course outlines. The instructional topics within the course outlines have been cross-referenced with corresponding performance objective codes from the task inventory in Section 1.

It is suggested that the Section 2 task sequence lists and course content outlines be reviewed initially in order that any desired changes in sequencing of instruction be made. Once the sequencing is confirmed, instructional planning and implementation may proceed by referring to the Section 1 performance objective code noted beside each instructional topic within the outline.

SECTION 1

TASK INVENTORY

One of the major characteristics of competency-based education (CBE) is that the course content is based upon actual jobs or tasks performed by the worker. In Virginia, the Department of Education has established standards for competency-based education. According to these standards, competencies must be role-relevant and based upon appropriate research. This standard states:

> Role-relevant competencies are identified and stated.
>
> The competencies, with standards, will be identified through V-TECS, IDECC, and other appropriate research. Advisory committees should be used to review competencies and standards. Competencies in the affective domain will be included. Role-relevant competencies for occupational preparation programs are those that specifically relate to the occupation for which the student is being prepared, as well as to the personal needs of the student. Role-relevant competencies are related also to orientation, exploration, and/or industrial arts experiences which have been identified for students.

Therefore, role-relevant jobs or tasks, called competencies in CBE, must be identified and validated before instructional materials are developed and subsequent instruction takes place. The task list in this task analyses guide is based on the following:

1. Job titles and descriptions found in the Occupational Outlook Handbook and the Dictionary of Occupational Titles
2. V-TECS catalogs
3. Input from agricultural education supervisors and experienced agricultural production teachers.

Information collected and reviewed from these sources was used to develop an initial task list. The next step involved in preparing the final task inventory was validation of the task list. Validation is essential if the information collected is to be useful in operating CBE courses and programs. The validation process included interviews with various professionals involved in both agricultural production occupations and teachers of agricultural production on the secondary level.

The task analyses sheets are arranged by duty areas for the specific domain covered by the guide. Information contained on each sheet includes:

1. The task/competency for a given duty area that is performed by incumbent workers
2. Course application information
3. Performance objective for the specific task
4. Criterion-referenced measures for instructional planning
5. Enabling objectives and instructional activities helpful in teaching the task/competency.

Additional instructional information is provided at the end of each duty area. The Equipment and Materials page contains a listing of the tools, materials, and supplies needed to teach each task. The Resources page contains information about audiovisual materials that may be used to supplement instruction. Textbooks, reference works, and other print materials that teachers may find helpful are listed on the References page.

In many instances, learning activities leading to mastery of task/competencies outlined in this section may take place in a cooperative work setting or in actual school- or community-related opportunities for agricultural production. However, all performance objectives are presented for classroom or laboratory instruction so they may be used in localities where these opportunities do not exist; they may be easily adapted to actual work situations.

TASK INVENTORY
FOR

AGRICULTURAL PRODUCTION

CONCEPT/DUTY AREAS

1. ORIENTING THE STUDENT TO AGRICULTURAL PRODUCTION
2. DEVELOPING LEADERSHIP SKILLS
3. USING MECHANICS IN AGRICULTURE
4. USING PLANT SCIENCE IN AGRICULTURAL PRODUCTION
5. MANAGING NATURAL RESOURCES
6. MAINTAINING THE HOME LAWN
7. MANAGING FAMILY RESOURCES
8. OPERATING THE FARM AS AN AGRICULTURAL BUSINESS
9. PRODUCING POULTRY
10. MANAGING AN APIARY

TASKS FROM LIVESTOCK PRODUCTION TASK ANALYSES SHOULD BE INCORPORATED IN THE AGRICULTURAL PRODUCTION MANAGEMENT (IV) AND OPERATING THE FARM BUSINESS (V) COURSES.

CONCEPT/DUTY AREA

ORIENTING THE STUDENT TO AGRICULTURAL PRODUCTION

TASKS/COMPETENCIES

1.1 Follow departmental policies

1.2 Perform safety procedures

1.3 Maintain a clean and orderly work area

1.4 Identify occupational tasks

1.5 Identify benefits and responsibilities of FFA membership

CONCEPT/DUTY AREA:

1. ORIENTING THE STUDENT TO AGRICULTURAL PRODUCTION

COURSE:

AGRICULTURAL PRODUCTION TECHNOLOGY (III) 8010

TASK/COMPETENCY:

1.1 Follow departmental policies

PERFORMANCE OBJECTIVE

P1.1 Given a copy of departmental policies concerning student responsibilities and procedures for daily operation, copies of school, class, and laboratory rules, and course objectives and evaluation procedures, follow departmental policies in classroom and laboratory work. All items on an instructor-prepared checklist must be rated acceptable.

CRITERION-REFERENCED MEASURE

C1.1 Instructor-prepared checklist; all items rated acceptable

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Identify student responsibilities in the classroom, laboratory, and on field trips.
2. Outline content and objectives of the course.
3. Explain procedures for the daily operation of the department.

CONCEPT/DUTY AREA:		**COURSE:**
1.	ORIENTING THE STUDENT TO AGRICULTURAL PRODUCTION	AGRICULTURAL PRODUCTION TECHNOLOGY (III) 8010

TASK/COMPETENCY:

1.2 Perform safety procedures

PERFORMANCE OBJECTIVE

P1.2 Given personal protective equipment, classroom and laboratory safety rules, and instructor's demonstration, perform safety procedures. Performance must be made in accordance with instructor's demonstration.

CRITERION-REFERENCED MEASURE

C1.2 Demonstration of safety procedures in accordance with instructor's demonstration

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Identify each item of personal safety equipment, and explain the use of each.

2. Outline all power tool safety rules for specific pieces of equipment.

3. Invite a representative of the fire department to discuss classes of fires and the type of fire extinguisher to use for each.

4. Demonstrate the operation of each type of fire extinguisher.

5. Interpret safety signs, symbols, and color codes.

6. Locate and explain cleaning, maintenance, and safety procedures in a specific equipment manual.

CONCEPT/DUTY AREA:

1. ORIENTING THE STUDENT TO AGRICULTURAL PRODUCTION

COURSE:

AGRICULTURAL PRODUCTION TECHNOLOGY (III) 8010

TASK/COMPETENCY:

1.3 Maintain a clean and orderly work area

PERFORMANCE OBJECTIVE

P1.3 Given instructor's guidelines, cleaning tools and supplies, cleaning schedules, and designated storage areas, maintain a clean and orderly work area. All items must be stored properly, and work area must be clean and organized in accordance with instructor's guidelines.

CRITERION-REFERENCED MEASURE

C1.3 Items stored, work area clean and organized; in accordance with instructor's guidelines

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Identify areas to be cleaned.
2. Explain cleaning schedule, and identify personnel responsible for specific cleaning duties.
3. Demonstrate cleaning procedures.
4. List items to be stored, and explain storage procedures.
5. Differentiate among types of cleaning products, and relate appropriate and inappropriate uses of each.
6. Discuss all safety precautions.

CONCEPT/DUTY AREA:

1. ORIENTING THE STUDENT TO AGRICULTURAL PRODUCTION

COURSE:

AGRICULTURAL PRODUCTION TECHNOLOGY (III) 8010
AGRICULTURAL PRODUCTION MANAGEMENT (IV) 8012
OPERATING THE FARM BUSINESS (V) 8014

TASK/COMPETENCY:

1.4 Identify occupational tasks

PERFORMANCE OBJECTIVE

P1.4 Given instructor's guidelines, Supervised Occupational Experience (SOE) record books, and assorted reference materials, identify occupational tasks related to agricultural production. Identification may be made in a written or oral report in accordance with instructor's guidelines.

CRITERION-REFERENCED MEASURE

C1.4 Written or oral report; instructor's guidelines

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Define occupational task.
2. Compare and contrast occupational tasks listed in V-TECS catalogs such as Farm Business Manager and Nursery Production.
3. Interview local employers concerning employee job tasks.
4. Read SOE record books, and relate experiences in terms of occupational tasks.
5. Record individual work experiences.

CONCEPT/DUTY AREA:

1. ORIENTING THE STUDENT TO AGRICULTURAL PRODUCTION

COURSE:

AGRICULTURAL PRODUCTION TECHNOLOGY (III) 8010
AGRICULTURAL PRODUCTION MANAGEMENT (IV) 8012
OPERATING THE FARM BUSINESS (V) 8014

TASK/COMPETENCY:

1.5 Identify benefits and responsibilities of FFA membership

PERFORMANCE OBJECTIVE

P1.5 Given copies of FFA materials, classroom discussion, and instructor-prepared worksheet, identify benefits and responsibilities of FFA membership by completing the worksheet as indicated by the instructor.

CRITERION-REFERENCED MEASURE

C1.5 Instructor-prepared worksheet; all items completed

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Explain the purpose and goals of the FFA.
2. State the structure and organization of the club.
3. Describe activities of various committees.
4. Show a videotape or slides of special FFA functions.
5. Identify FFA contests and awards, and relate possible benefits.
6. Invite former FFA members to discuss ways membership in the organization benefited them.

EQUIPMENT AND MATERIALS

Task 1.1

Instructor-provided materials: Classroom/laboratory rules
Course objectives
Checklist

Task 1.2

Equipment manuals
Fire extinguishers
Personal safety equipment
Instructor-prepared handout: Classroom and laboratory safety rules

Task 1.3

Cleaning supplies, tools, and equipment
Instructor-provided handouts: Cleaning schedule
Guidelines

Task 1.4

SOE record book
Instructor-prepared guidelines

Task 1.5

Instructor-prepared worksheet
FFA materials

RESOURCES

Task 1.2

Audiovisual package: Power Tool Safety. Hobar.
Slides/Cassette: Developing Shop Safety Skills. AAVIM.

Task 1.5

Film: Agricultural Proficiency Awards. National FFA Supply Service.

REFERENCES

Task 1.1

None identified

Task 1.2

Agricultural Shop Safety: Teacher's Guide. Clemson University.
Modern Agricultural Mechanics. Wakeman.
Power Tool Safety and Operation. Hoerner.
Shop Equipment Safety and Operation. Burke and others.

Task 1.3

Agricultural Shop Safety: Teacher's Guide. Clemson University.
Developing Shop Safety Skills. AAVIM.

Task 1.4

Virginia Supervised Occupational Experience Record Book. McMillion.

Task 1.5

Advisor's Guide to the Student Handbook. Future Farmers of America.
FFA Activity Handbook. Future Farmers of America.
Official FFA Manual. Future Farmers of America.

CONCEPT/DUTY AREA

2. DEVELOPING LEADERSHIP SKILLS

TASKS/COMPETENCIES

2.1 Identify duties of all officers in the FFA

2.2 Deliver a speech

2.3 Participate in a panel discussion

2.4 Write a news release

2.5 Participate in a committee meeting

CONCEPT/DUTY AREA:

2. DEVELOPING LEADERSHIP SKILLS

COURSE:

AGRICULTURAL PRODUCTION TECHNOLOGY (III) 8010

TASK/COMPETENCY:

2.1 Identify duties of all officers in the FFA

PERFORMANCE OBJECTIVE

P2.1 Given the student organization handbook, identify the duties of each FFA officer on a written quiz with 90% accuracy.

CRITERION-REFERENCED MEASURE

C2.1 Instructor-prepared written quiz; 90% accuracy

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Identify each officer in the student organization.
2. Explain the duties and responsibilities of a specific officer such as vice-president.
3. Participate in a mock meeting, performing duties of specified officers.
4. Present a videotape of an actual meeting in which duties of various officers are illustrated.
5. Discuss the goals of the FFA and the role of each officer in attaining these goals.

CONCEPT/DUTY AREA:

2. DEVELOPING LEADERSHIP SKILLS

COURSE:

AGRICULTURAL PRODUCTION TECHNOLOGY (III) 8010

TASK/COMPETENCY:

2.2 Deliver a speech

PERFORMANCE OBJECTIVE

P2.2 Given a list of topics and resource materials, deliver a ten-minute speech on one topic, using accepted public speaking techniques as designated in the National FFA Contest, Bulletin No. 4.

CRITERION-REFERENCED MEASURE

C2.2 Ten-minute speech; National FFA Contest, Bulletin No. 4

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Prepare an outline from which to give an oral presentation.
2. List the qualities of a good speaker.
3. Identify the types of speeches.
4. Present video or cassette tapes of various speeches, and have students list good and bad points in each.

CONCEPT/DUTY AREA:

2. DEVELOPING LEADERSHIP SKILLS

COURSE:

AGRICULTURAL PRODUCTION TECHNOLOGY (III) 8010

TASK/COMPETENCY:

2.3 Participate in a panel discussion

PERFORMANCE OBJECTIVE

P2.3 Given a setting including at least two other students, a list of topics concerning the agricultural production course of study, and instructor's guidelines, participate in a panel discussion. The discussion must cover at least three salient points concerning a topic from the list and conform to guidelines provided.

CRITERION-REFERENCED MEASURE

C2.3 Panel discussion incorporating at least three salient points; topic from list provided and in accordance with instructor's guidelines

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Discuss the benefits of a panel discussion as a learning tool.
2. Evaluate a televised panel discussion such as Face the Nation.
3. Describe characteristics of effective oral communication.
4. Explain the duties of the panel discussion leader.
5. Identify the objectives to be accomplished.

CONCEPT/DUTY AREA:

2. DEVELOPING LEADERSHIP SKILLS

COURSE:

AGRICULTURAL PRODUCTION TECHNOLOGY (III) 8010

TASK/COMPETENCY:

2.4 Write a news release

PERFORMANCE OBJECTIVE

P2.4 Given information about a project activity, write a news release concerning the activity. Release must be 300-500 words in length with no grammatical errors, and must contain all specified information.

CRITERION-REFERENCED MEASURE

C2.4 News release, grammatically correct and 300-500 words in length, containing the following information: a) who participated in the activity; b) what the activity involved; c) how the activity proceeded; and d) when and where the activity occurred.

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Write a description of an object or activity.
2. Review rules of grammar.
3. Discuss the information that should be covered in a news release.
4. Analyze news releases found in the newspaper.
5. Describe the proper format of a news release.
6. Interview project participants to obtain information.

CONCEPT/DUTY AREA:

2. DEVELOPING LEADERSHIP SKILLS

COURSE:

AGRICULTURAL PRODUCTION TECHNOLOGY (III) 8010

TASK/COMPETENCY:

2.5 Participate in a committee meeting

PERFORMANCE OBJECTIVE

P2.5 Given a committee meeting and a list containing problems that the committee must address, participate in a committee meeting. The committee should select one problem, deliberate methods of resolving the problem, and recommend a suitable course of action in a committee report.

CRITERION-REFERENCED MEASURE

C2.5 Participation in committee meeting resulting in an oral or written report containing committee recommendations

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Define debate, cooperation, compromise, and consensus.
2. Describe the advantages and disadvantages of forming committees.
3. Identify a school problem, and discuss at least two possible solutions to the problem.
4. Outline the format of a committee report.
5. Identify the duties of the chairperson.

EQUIPMENT AND MATERIALS

Task 2.1

Instructor-prepared written quiz

Task 2.2

National FFA Contest, Bulletin No. 4. National FFA.

Task 2.3

Instructor-provided handouts: List of topics
Guidelines

Task 2.4

None identified

Task 2.5

Instructor-provided materials for committee meeting

REFERENCES

Task 2.1

Official FFA Manual. Future Farmers of America.

Tasks 2.2-2.4

Improving Communications, Leadership, and Personal Development. Harp.

Task 2.5

FFA Leadership Handbook. Moody and Miller.

CONCEPT/DUTY AREA

3. USING MECHANICS IN AGRICULTURE

TASKS/COMPETENCIES

3.1 Figure a bill of materials from a drawing of a proposed building
3.2 Tune a tractor engine
3.3 Install electrical switches
3.4 Select an electric motor for a specific job
3.5 Develop renovation plan
3.6 Operate a major farm machine
3.7 Construct a section of farm fence
3.8 Select planting and harvesting equipment
3.9 Identify welding safety equipment and practices
3.10 Develop a farm structure construction plan
3.11 Select fuels and lubricants
3.12 Plan a farm service center
3.13 Install electrical controls on a motor
3.14 Plan a farm water system
3.15 Assist with the installation of a farm water system
3.16 Service diesel/gasoline fuel systems
3.17 Paint machinery
3.18 Repair machinery
3.19 Lubricate farm equipment
3.20 Prepare equipment for storage
3.21 Service the hydraulic system
3.22 Calibrate a sprayer

CONCEPT/DUTY AREA:

3. USING MECHANICS IN AGRICULTURE

COURSE:

AGRICULTURAL PRODUCTION TECHNOLOGY (III) 8010
AGRICULTURAL PRODUCTION MANAGEMENT (IV) 8012

TASK/COMPETENCY:

3.1 Figure a bill of materials from a drawing of a proposed building

PERFORMANCE OBJECTIVE

P3.1 Given plans and sketches of planned farm buildings, figure a bill of materials for a proposed building and the total cost of the building using current market price information. Calculations must be within 90% of those calculated by the instructor.

CRITERION-REFERENCED MEASURE

C3.1 Calculations for materials and total cost within 90% of figures calculated by instructor

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Define footing, foundation, ceiling joist, pitch, sill, partition, and roll roofing.
2. Review reading blueprints and specifications.
3. Arrange for students to tour a construction site.
4. List materials needed for construction.
5. Identify sources of contruction materials.
6. Determine costs of materials.
7. Incorporate project as part of an SOEP, if possible.

CONCEPT/DUTY AREA:

3. USING MECHANICS IN AGRICULTURE

COURSE:

AGRICULTURAL PRODUCTION
MANAGEMENT (IV) 8012
OPERATING THE FARM
BUSINESS (V) 8014

TASK/COMPETENCY:

3.2 Tune a tractor engine

PERFORMANCE OBJECTIVE

P3.2 Given a tractor, manufacturer's specifications, and the necessary tools, tune the engine. All items on an instructor-prepared checklist must be rated acceptable.

CRITERION-REFERENCED MEASURE

C3.2 Instructor-prepared checklist; all items rated acceptable

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Describe the procedure for using a feeler gauge to check the breaker points.
2. Discuss two methods of timing an engine that can be done on the farm.
3. Adjust points for proper spacing.
4. Outline procedures for servicing spark plugs.
5. Explain the effect on engine operation when the idle mixture adjusting screw is turned in or out.
6. Explain how to remove primary filter, clean container, and install new filter on a diesel engine.
7. Demonstrate how to install and adjust a carburetor.

CONCEPT/DUTY AREA:

3. USING MECHANICS IN AGRICULTURE

COURSE:

AGRICULTURAL PRODUCTION TECHNOLOGY (III) 8010
AGRICULTURAL PRODUCTION MANAGEMENT (IV) 8012

TASK/COMPETENCY:

3.3 Install electrical switches

PERFORMANCE OBJECTIVE

P3.3 Given an electrical switch and the necessary tools, install the electrical switch. The switch must operate correctly, and all standards set forth by the local electrical code must be met.

CRITERION-REFERENCED MEASURE

C3.3 Electrical switch installed correctly and operational; electrical code specifications met

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Discuss the steps in installing an electrical switch.
2. Demonstrate how to attach wires to switch.
3. Identify the types of switches.
4. Demonstrate the proper method of soldering wires when installing switches.
5. State all code specifications.
6. Explain all safety procedures.
7. Define circuit breakers, fuse, grounding, and distribution panel.

CONCEPT/DUTY AREA:

3. USING MECHANICS IN AGRICULTURE

COURSE:

AGRICULTURAL PRODUCTION
TECHNOLOGY (III) 8010
AGRICULTURAL PRODUCTION
MANAGEMENT (IV) 8012
OPERATING THE FARM
BUSINESS (V) 8014

TASK/COMPETENCY:

3.4 Select an electric motor for a specific job

PERFORMANCE OBJECTIVE

P3.4 Given the power requirements, select appropriate electric motor for specified job. Selection must be judged acceptable according to an instructor-prepared checklist based on specifications.

CRITERION-REFERENCED MEASURE

C3.4 Instructor-prepared checklist; all items rated acceptable

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Name the four types of electric motors.
2. Determine uses of each of the four types of electric motors.
3. Identify accessories available for electric motors.
4. Identify controls and overloads available and the uses of the overloads and controls.
5. List safety precautions to observe when working with electric motors.
6. Identify the strengths and weaknesses of each type of motor.
7. Calculate the cost to run a motor for a specific job.

CONCEPT/DUTY AREA:

3. USING MECHANICS IN AGRICULTURE

COURSE:

AGRICULTURAL PRODUCTION TECHNOLOGY (III) 8010
OPERATING THE FARM BUSINESS (V) 8014

TASK/COMPETENCY:

3.5 Develop renovation plan

PERFORMANCE OBJECTIVE

P3.5 Given a case situation for the renovation of a farm building, develop a renovation plan. Plan must include materials needed; cost of materials; sketches; and projected time to complete project.

CRITERION-REFERENCED MEASURE

C3.5 Renovation plan completed; all specified components included

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Determine ways to improve efficiency of facility.
2. Develop budget for renovation of building.
3. Figure bill of materials.
4. Determine costs of materials.
5. Sketch planned improvements.
6. Identify buildings on school grounds that might be appropriate for case study.
7. Interview employers of SOE or co-op students to identify possible sites in the community that might serve as renovation projects.
8. Arrange for students to renovate a farm building as an FFA activity.

CONCEPT/DUTY AREA:

3. USING MECHANICS IN AGRICULTURE

COURSE:

AGRICULTURAL PRODUCTION TECHNOLOGY (III) 8010
AGRICULTURAL PRODUCTION MANAGEMENT (IV) 8012

TASK/COMPETENCY:

3.6 Operate a major farm machine

PERFORMANCE OBJECTIVE

P3.6 Given a major farm machine, service manual, safety equipment, and a specific task, operate the machine to accomplish the task. The machine must be operated as specified in the service manual, and all safety procedures must be observed. All items on an instructor-prepared checklist must be rated acceptable.

CRITERION-REFERENCED MEASURE

C3.6 Instructor-prepared checklist; all items rated acceptable

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Identify safety features of the piece of machinery.
2. Outline safe procedure for operating machines.
3. Name primary parts of machine.
4. Check fuel and oil in machine.
5. Identify proper and improper applications of the machine.

CONCEPT/DUTY AREA:

3. USING MECHANICS IN AGRICULTURE

COURSE:

AGRICULTURAL PRODUCTION TECHNOLOGY (III) 8010
AGRICULTURAL PRODUCTION MANAGEMENT (IV) 8012

TASK/COMPETENCY:

3.7 Construct a section of farm fence

PERFORMANCE OBJECTIVE

P3.7 Given access to a suitable landscape, fencing materials, and the necessary tools, construct a section of farm fence. All items on an instructor-prepared checklist must be rated acceptable.

CRITERION-REFERENCED MEASURE

C3.7 Instructor-prepared checklist; all items rated acceptable

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Select an area that requires fencing, and secure permission for the class to assist with construction.
2. Name types of fences; explain the use of each.
3. Calculate number of line posts of appropriate type and size to use.
4. Select anchor-post assembly to be used.
5. Calculate costs of materials for a specific location.
6. List procedure to follow in constructing a particular type of fence (barbed wire, woven wire, high tension, electric, cable, welded panel, wood rail, chain link).
7. Discuss the advantages and disadvantages of different fencing materials.
8. Draw sketches of the types of fences found in the community.

CONCEPT/DUTY AREA:

3. USING MECHANICS IN AGRICULTURE

COURSE:

AGRICULTURAL PRODUCTION
TECHNOLOGY (III) 8010
AGRICULTURAL PRODUCTION
MANAGEMENT (IV) 8012

TASK/COMPETENCY:

3.8 Select planting and harvesting equipment

PERFORMANCE OBJECTIVE

P3.8 Given a farm location or a case study involving the planting and harvesting of a crop, select the planting and harvesting equipment needed by completing a written plan. The plan must include: a) the specific crop to be planted and harvested; b) size of the crop; c) size of the equipment needed; d) available power; and e) determination of whether the equipment should be bought or rented.

CRITERION-REFERENCED MEASURE

C3.8 Written plan; all specified components included

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Distinguish among grain harvesting equipment, hay and forage harvesting equipment, vegetable and fruit harvesters, and specialty crop harvesters.
2. Identify equipment needed to cultivate various crops.
3. Determine job demands for specified pieces of equipment.
4. Compute ownership and operating costs of selected equipment.
5. Calculate rental costs of equipment.
6. Determine power available for selected pieces of equipment.
7. Determine availability of parts and repair of equipment.
8. Compare design, ease of operation, maneuverability, and comfort of selected pieces of equipment.

CONCEPT/DUTY AREA:

3. USING MECHANICS IN AGRICULTURE

COURSE:

AGRICULTURAL PRODUCTION TECHNOLOGY (III) 8010
OPERATING THE FARM BUSINESS (V) 8014

TASK/COMPETENCY:

3.9 Identify welding safety equipment and practices

PERFORMANCE OBJECTIVE

P3.9 Given gas and arc welding equipment and safety equipment, identify welding safety equipment and practices by demonstrating the correct assembly and use of welding and safety equipment with 100% accuracy.

CRITERION-REFERENCED MEASURE

C3.9 Demonstration of assembly and use of welding and safety equipment; 100% accuracy

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Demonstrate the correct procedures for operating welding equipment.
2. Identify and explain the use of all personal safety equipment.
3. State local, state, and federal laws concerning gas storage.
4. Demonstrate cleaning of all welding equipment.

CONCEPT/DUTY AREA:

3. USING MECHANICS IN AGRICULTURE

COURSE:

AGRICULTURAL PRODUCTION
MANAGEMENT (IV) 8012
OPERATING THE FARM
BUSINESS (V) 8014

TASK/COMPETENCY:

3.10 Develop farm structure construction plan

PERFORMANCE OBJECTIVE

P3.10 Given a case situation, develop a plan for the construction of a specific farm structure. Plan must include all specified components.

CRITERION-REFERENCED MEASURE

C3.10 Completed construction plan includes: a) sketch of proposed structure; b) bill of materials; c) justification of type of materials chosen; d) budget; and e) explanation of any permits needed.

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Compare costs of various building materials.
2. List advantages and disadvantages of selected building materials.
3. Determine appropriate size of structure.
4. Interpret blueprints.
5. Determine foundation and roofing type needed.
6. Determine utilities needed.
7. Determine labor costs.
8. Survey local farm structures, and analyze maintenance costs.
9. Arrange for students to work on a construction project as part of an SOE plan.

CONCEPT/DUTY AREA:

3. USING MECHANICS IN AGRICULTURE

COURSE:

AGRICULTURAL PRODUCTION TECHNOLOGY (III) 8010
AGRICULTURAL PRODUCTION MANAGEMENT (IV) 8012

TASK/COMPETENCY:

3.11 Select fuels and lubricants

PERFORMANCE OBJECTIVE

P3.11 Given an engine, service manual, and a variety of fuels and lubricants, select the appropriate fuels and lubricants for the specific engine. Selection must be in agreement with manufacturer's recommendations as stated in the manual.

CRITERION-REFERENCED MEASURE

C3.11 Correct fuel and lubricant selected for specific engine; in accordance with recommendations found in service manual

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Define octane rating, and explain the importance.
2. Discuss how engines develop power.
3. List factors to consider in selecting fuel for LP-gas engines.
4. Describe ways to conserve fuels.
5. Read the label of an oil can, and list the engines in which the oil could be used.
6. List the factors to consider when selecting crankcase oil, gear lubricants, hydraulic fluid, and lubricating grease.
7. State all safety precautions to observe when working with gasoline and other fuels.
8. Explain how fuels and lubricants should be stored.
9. Survey the home garage or storage shed, and verify that all fuels and lubricants are stored correctly.

CONCEPT/DUTY AREA:

3. USING MECHANICS IN AGRICULTURE

COURSE:

AGRICULTURAL PRODUCTION
MANAGEMENT (IV) 8012
OPERATING THE FARM
BUSINESS (V) 8014

TASK/COMPETENCY:

3.12 Plan a farm service center

PERFORMANCE OBJECTIVE

P3.12 Given specifications, equipment catalogues, and drawing materials, plan a farm service center. Plan must include all specified components.

CRITERION-REFERENCED MEASURE

C3.12 Farm service plan is completed with the following components included and completed fully: a) a statement identifying the location of the center; b) a list of equipment needed; c) a sketch and layout of the center; d) a plan for purchase and maintenance of equipment; and e) a safety plan.

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Identify possible sites for farm service center.
2. Identify equipment needed.
3. Identify electrical outlets needed for an efficient farm service center.
4. Plan floor layout for the center.
5. Discuss safety precautions.
6. Describe a plan for equipment maintenance.
7. Visit a farm service center on a local farm.

CONCEPT/DUTY AREA:

3. USING MECHANICS IN AGRICULTURE

COURSE:

AGRICULTURAL PRODUCTION MANAGEMENT (IV) 8012
OPERATING THE FARM BUSINESS (V) 8014

TASK/COMPETENCY:

3.13 Install electrical controls on a motor

PERFORMANCE OBJECTIVE

P3.13 Given an electric motor, appropriate controls, and the necessary tools, install the electrical controls on the motor. Installed controls must operate properly, and all safety precautions must be observed. All items on an instructor-prepared checklist must be rated acceptable.

CRITERION-REFERENCED MEASURE

C3.13 Instructor-prepared checklist; all items rated acceptable

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. List methods of controlling a motor.
2. Describe the operation of a magnetic motor starter.
3. Explain overcurrent protection of a motor and motor circuit.
4. Wire a single-contact control device.
5. Wire a simple control circuit.
6. Explain protection of motor control circuits.

CONCEPT/DUTY AREA:

3. USING MECHANICS IN AGRICULTURE

COURSE:

AGRICULTURAL PRODUCTION
MANAGEMENT (IV) 8012
OPERATING THE FARM
BUSINESS (V) 8014

TASK/COMPETENCY:

3.14 Plan a farm water system

PERFORMANCE OBJECTIVE

P3.14 Given a farm location or description of a farm with a list of crops to be grown, plan a farm water system to meet the water requirements of the farm. Ninety percent of the water requirements determined by the instructor must be met in the plan, and provisions for safe water must be included.

CRITERION-REFERENCED MEASURE

C3.14 Water system plan meets 90% of water requirements determined by instructor and provides for safe water

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Determine water needs for a specific crop.
2. Identify water sources available for the farm.
3. Examine methods of obtaining additional water.
4. Determine methods of providing safe water.
5. Plan the pumping installation.
6. Plan the piping installation.
7. Plan the electrical installation.
8. Compute daily water needs for a family.
9. Maintain rainfall data as a FFA activity each year, and use figures to determine average rainfall.
10. Arrange for students to tour farms where irrigation systems are used.

CONCEPT/DUTY AREA:

3. USING MECHANICS IN AGRICULTURE

COURSE:

AGRICULTURAL PRODUCTION
MANAGEMENT (IV) 8012
OPERATING THE FARM
BUSINESS (V) 8014

TASK/COMPETENCY:

3.15 Assist with installation of a farm water system

PERFORMANCE OBJECTIVE

P3.15 Given the necessary tools and directions, assist with the installation of a farm water system. All items on an instructor-prepared checklist must be rated acceptable.

CRITERION-REFERENCED MEASURE

C3.15 Instructor-prepared checklist; all items rated acceptable

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Identify hand and power tools used by plumbers.
2. Describe the function of each hand and power tool.
3. Design performance tests for using squares and levels and for sawing, drilling, filing, cutting, nailing, threading, and installing pipe.

CONCEPT/DUTY AREA:

3. USING MECHANICS IN AGRICULTURE

COURSE:

AGRICULTURAL PRODUCTION MANAGEMENT (IV) 8012
OPERATING THE FARM BUSINESS (V) 8014

TASK/COMPETENCY:

3.16 Service diesel/gasoline fuel systems

PERFORMANCE OBJECTIVE

P3.16 Given an instructor's demonstration, replacement parts, clean rags, and suitable wrenches, service the diesel/gasoline fuel system on a designated tractor according to stated criteria.

CRITERION-REFERENCED MEASURE

C3.16 Fuel system must be clean, have no leaks, and be serviced according to instructor's demonstration; tractor must start and run properly

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Adjust carburetor float.
2. Adjust carburetor idle air/fuel mixture.
3. Adjust engine idle speed.
4. Clean carburetor.
5. Clean sediment bowl.
6. Replace fuel pump.
7. Bleed diesel fuel system.
8. Service diesel fuel filter.
9. Service diesel fuel injector.

CONCEPT/DUTY AREA:

3. USING MECHANICS IN AGRICULTURE

COURSE:

OPERATING THE FARM BUSINESS (V) 8014

TASK/COMPETENCY:

3.17 Paint machinery

PERFORMANCE OBJECTIVE

P3.17 Given a spray gun, respirator, compressed air source, and a specific machine, paint the machine. Paint should be applied evenly over the entire surface, and the completed paint job must be smooth and glossy. All safety procedures must be observed.

CRITERION-REFERENCED MEASURE

C3.17 Painted surface even, smooth, and glossy; all safety procedures observed

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Discuss safety aspects of spray painting.
2. Demonstrate the operation of a spray gun.
3. Adjust a spray gun for proper application of paint.
4. Prepare spray room.
5. Thin paint to manufacturer's recommendation.
6. Pour paint through strainer into gun reservoir.
7. Adjust spray gun.
8. Describe cleaning procedures of spray painting equipment.

CONCEPT/DUTY AREA:

3. USING MECHANICS IN AGRICULTURE

COURSE:

OPERATING THE FARM BUSINESS (V) 8014

TASK/COMPETENCY:

3.18 Repair machinery

PERFORMANCE OBJECTIVE

P3.18 Given access to various types of machinery, service manuals, and the necessary tools, repair a specified machine. The machine must be repaired according to specifications in the manual.

CRITERION-REFERENCED MEASURE

C3.18 Machine repaired in accordance with specifications in service manual

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Identify basic types of belts, drives, chains, and gears; explain their application in equipment usage.
2. Inspect components of equipment for wear, improper performance, etc.
3. Adjust belts, chains, and sprockets.
4. Examine machine to determine if all safety shields are in place.

CONCEPT/DUTY AREA:

3. USING MECHANICS IN AGRICULTURE

COURSE:

OPERATING THE FARM BUSINESS (V) 8014

TASK/COMPETENCY:

3.19 Lubricate farm equipment

PERFORMANCE OBJECTIVE

P3.19 Given manufacturer's specifications, tools and equipment, and farm equipment, lubricate a selected piece of equipment. Lubricant selected and lubrication procedures followed must be in accordance with manufacturer's specifications.

CRITERION-REFERENCED MEASURE

C3.19 Equipment lubricated according to manufacturer's specifications

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Define grease seal, chassis grease, and multi-purpose grease.
2. Locate maintenance and lubrication information in service manual.
3. State all safety precautions associated with lubrication of various types of equipment.
4. List all supplies needed to lubricate equipment.

CONCEPT/DUTY AREA:

3. USING MECHANICS IN AGRICULTURE

COURSE:

OPERATING THE FARM BUSINESS (V) 8014

TASK/COMPETENCY:

3.20 Prepare equipment for storage

PERFORMANCE OBJECTIVE

P3.20 Given a specific piece of equipment, the necessary materials and supplies, and service manual, prepare equipment for storage. All procedures noted in the manual must be implemented.

CRITERION-REFERENCED MEASURE

C3.20 Equipment prepared for storage in accordance with instructions in service manual

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Explain reasons for preparing equipment for storage.
2. Discuss the manufacturer's recommendation for storage.
3. Locate storage areas in the agricultural facilities.

CONCEPT/DUTY AREA:

3. USING MECHANICS IN AGRICULTURE

COURSE:

OPERATING THE FARM BUSINESS (V) 8014

TASK/COMPETENCY:

3.21 Service the hydraulic system

PERFORMANCE OBJECTIVE

P3.21 Given a piece of equipment, the service manual, the correct type of hydraulic oil, and the necessary tools, service the hydraulic system of the equipment. The system must be serviced in accordance with procedures found in the service manual, and all safety procedures must be observed.

CRITERION-REFERENCED MEASURE

C3.21 Hydraulic system serviced as specified in service manual; all safety procedures observed

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Change hydraulic filter.
2. Clean and flush hydraulic system.
3. Drain and refill hydraulic system.
4. Demonstrate operation of hydraulic tester.
5. State all safety procedures associated with servicing specific pieces of equipment.

CONCEPT/DUTY AREA:

3. USING MECHANICS IN AGRICULTURE

COURSE:

AGRICULTURAL PRODUCTION TECHNOLOGY (III) 8010

TASK/COMPETENCY:

3.22 Calibrate a sprayer

PERFORMANCE OBJECTIVE

P3.22 Given a sprayer, service manual, and auxiliary equipment, calibrate the sprayer to within 1% of the application rate as specified by the instructor.

CRITERION-REFERENCED MEASURE

C3.22 Sprayer calibrated within 1% of the application rate as specified by the instructor

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Fill a sprayer with water.
2. Select a constant tractor speed and pump pressure suited to nozzles and terrain.
3. Select appropriate nozzle.
4. Measure and mark a specific distance of travel.
5. With tractor running at selected constant speed, measure the time needed to travel the selected distance.
6. With pump running at selected constant pressure, collect spray for the time needed to travel the measured distance.
7. Determine amount of material sprayed.
8. Calculate area sprayed in acres.
9. Calculate amount of material sprayed on one acre.
10. Determine amount of chemical needed to spray one acre.
11. Determine amount of material to be added to one tank of water.

EQUIPMENT AND MATERIALS

Task 3.1

Building plans and blueprints
Material estimates

Task 3.2

Safety glasses
Screwdrivers
Wrenches
Solvent
Air hose
Clean rags
Service manual
Replacement parts (spark plugs, etc.)
Instructor-prepared checklist

Task 3.3

Electrical switches and tools for installation
Local/state electrical code requirements

Task 3.4

Electric motors and controls
Instructor-prepared checklist

Task 3.5

Case situations for building renovation

Task 3.6

Safety glasses/equipment
Selected farm machines and accompanying service manuals
Instructor-prepared checklist

Task 3.7

Fencing materials
Tools and equipment for constructing fences
Instructor-prepared checklist

Task 3.8

Instructor-prepared case study

Task 3.9

Arc welding equipment
Gas welding equipment
Electrodes
Scrap metal
Safety equipment

Task 3.10

Instructor-prepared case study
Samples of siding and roofing materials
Building plans

Task 3.11

Oil cans
Lubricants/fuels
Service manual
Specification charts

Task 3.12

Equipment catalogues
Blueprints/specifications
Drawing equipment
Sketches/pictures of farm service centers

Task 3.13

Electric motor
Various controls
Hand tools
Wire
Instructor-prepared checklist

Task 3.14

Rain gauges
Water test kits

Task 3.15

Plumbing tools
Pipe
Plumbing fixtures
Pump
Instructor-prepared checklist
Pressure tank

Task 3.16

Replacement filters and gaskets
Service manual
Wrenches
Tractor
Pliers
Screwdrivers
Clean rags

Task 3.17

Compressed air source
Paint gun
Paint room
Safety equipment
Respirator
Spray painting materials
Cleaning materials

Task 3.18

Service manual
Wrenches
Spare parts
Screwdrivers

Task 3.19

Service manual
Clean rags
Lubricants
Tools for lubricating equipment

Task 3.20

Steam cleaner
Lubricating materials
Service manual

Task 3.21

Replacement parts
Testing equipment
Service manual
Tools

Task 3.22

Service manual
Tractor
Tractor-mounted sprayer
Measuring tape

RESOURCES

Task 3.1

Software: Building Materials Costs. (Apple II, TRS, IBM). AAVIM.

Task 3.2

Transparencies: Tractor Tune-up and Maintenance. Vocational Agriculture Service.

Task 3.3

Filmstrip/Slides/Software: Electrical Wiring. AAVIM.

Task 3.4

Filmstrip/Slides: How Electric Motors Start and Run. AAVIM.

Task 3.6

Software: Communicating for Safe Tractor Operations. (TRS). AAVIM.

Task 3.8

Software: Equipment Fixed Charge. (Apple II, TRS). AAVIM.
Machinery Management. (Apple). AAVIM.

Task 3.9

Software: Arc Welding. (Apple II). AAVIM.

Task 3.10

Audiovisual package: Determining and Installing Materials. AAVIM.

Task 3.12

Filmstrip/Slides: Developing Shop Safety Skills. AAVIM.
Safety Color Coding for the Shop. AAVIM.

Task 3.13

Slides/Transparencies: Electric Motors. AAVIM.
Transparencies: Electric Motors. Vocational Agriculture Service.

Task 3.14

Slides: Planning for an Irrigation System. AAVIM.

Task 3.17

Transparencies: Spray Painting. Vocational Agriculture Service.

Task 3.19

Slides: Fuels, Lubricants and Coolants. AAVIM.

Task 3.22

Slides: The Calibration of Low Pressure Field Sprayers. Ohio Agricultural Education Curriculum Materials Service.

Software: Sprayer Calibration. (Apple II, TRS). AAVIM.

REFERENCES

Task 3.1

Mechanics in Agriculture. Phipps.
Modern Agricultural Mechanics. Wakeman.

Task 3.2

Fundamentals of Service: Engines. John Deere Company.
Specifications for Tune-up and Service of Farm Tractors. AAVIM.
Tractor Maintenance. AAVIM.
Tractor Mechanic. V-TECS.

Task 3.3

Agricultural Electrification. Surbrook and Mullin.
Electrical Wiring. AAVIM.
Maintaining the Lighting and Wiring System. AAVIM.

Task 3.4

Electric Motors--Student Workbook. AAVIM.
Electric Motors--Teacher Guide. AAVIM.
Electric Motors: Selection, Protection, Drives. AAVIM.
How Electric Motors Start and Run. AAVIM.
Modern Agricultural Mechanics. AAVIM.

Task 3.5

Utility Buildings. AAVIM.

Task 3.6

Farm Equipment Operator. V-TECS.
Working in Agricultural Mechanics. Shinn and Weston.

Task 3.7

Building Fences. AAVIM.
Gardening-Groundskeeping, p. 122. V-TECS.
Health and Safety Code Handbook. Forest Service. U. S. Department of Agriculture.

Task 3.8

None identified

Task 3.9

Arc Welding. AAVIM.
Metals and How to Weld Them. Jefferson and Woods.
The Oxyacetylene Handbook. Union Carbide Corporation.
Teacher's Manual: Arc Welding Instructions for Beginners. James F. Lincoln Company.

Task 3.10

Construction: Basic Principles. AAVIM.
Utility Buildings. AAVIM.

Task 3.11

Fuels and Lubricants. AAVIM.
Specifications for Tune-up and Service of Farm Tractors. AAVIM.

Task 3.12

Developing Shop Safety Skills. AAVIM.
Safety Color Coding for the Shop. AAVIM.
Shop Planning. AAVIM.
Utility Buildings. AAVIM.

Task 3.13

Agricultural Electrification. Surbrook and Mullin.
Electric Motors: Selection, Protection, Drives. AAVIM.

Task 3.14

Conservation Farming. Hughes.
Planning for an Individual Water System. AAVIM.
Planning for an Irrigation System. AAVIM.

Task 3.15

Planning for an Individual Water System. AAVIM.

Task 3.16

Farm Tractors: Preventive Maintenance. AAVIM.
Fundamentals of Service: Engines. John Deere Company.
Safe Tractor Operation and Daily Care. Henderson.

Task 3.17

Mechanics in Agriculture. Phipps.

Task 3.18

Farm Equipment Operator. V-TECS.
Gardening-Groundskeeping. V-TECS.
Specifications for Tune-up and Service of Farm Tractors. AAVIM.

Task 3.19

Farm Equipment Operator. V-TECS.
Fuels and Lubricants. AAVIM.
Safe Tractor Operation and Daily Care. Henderson.

Task 3.20

Tractor and Small Engine Maintenance. Brown.

Task 3.21

Fundamentals of Service: Hydraulics. John Deere Company.
Hydraulics: Hydraulic Systems for Tractors and Other Mobile Equipment. Vol. 1. AAVIM.
Hydraulics: Hydraulic Systems for Tractors and Other Mobile Equipment. Vol. 2. AAVIM.

Task 3.22

The Calibration of Low Pressure Field Sprayers. Ohio Agricultural Education Curriculum Materials Service.
Gardening-Groundskeeping, Performance Objective 108. V-TECS.
Mechanics in Agriculture. Phipps.
Pesticide Applicator Certification Training Manual. Virginia Cooperative Extension Service.

CONCEPT/DUTY AREA

4. USING PLANT SCIENCE IN AGRICULTURAL PRODUCTION

TASKS/COMPETENCIES

4.1 Interpret maps

4.2 Prepare land use plan

4.3 Plan a cropping program

4.4 Determine the feasibility of purchasing crop insurance

4.5 Interpret soil test report

4.6 Develop budget for changing a crop program

4.7 Determine the fertilizer needs for a crop

4.8 Develop plan for seed/plant needs

4.9 Develop plan for pesticide need

4.10 Identify seed samples

4.11 List the criteria used in hybrid seed corn selections

4.12 Prepare seed beds

4.13 Plant crops

4.14 Recommend crop management practices to improve volume of grain produced

4.15 Plan a cultivation program

4.16 Describe weed control measure

4.17 Identify disease control measures

4.18 Develop crop marketing plan

4.19 Develop plan for purchase and operation of irrigation system

4.20 Develop a contract for providing custom crop services

4.21 Identify types of grain damage

4.22 Harvest crops

4. USING PLANT SCIENCE IN AGRICULTURAL PRODUCTION (continued)

4.23 Dry grain
4.24 Prepare inventory of harvested crops
4.25 Determine weight loss incurred in drying grain
4.26 Prepare a crop exhibit

CONCEPT/DUTY AREA:

4. USING PLANT SCIENCE IN AGRICULTURAL PRODUCTION

COURSE:

AGRICULTURAL PRODUCTION
TECHNOLOGY (III) 8010
OPERATING THE FARM
BUSINESS(V) 8014

TASK/COMPETENCY:

4.1 Interpret maps

PERFORMANCE OBJECTIVE

P4.1 Given a soil survey map of the locality, interpret the map symbols, legend information, and the representations of elevation and relief with 90% accuracy.

CRITERION-REFERENCED MEASURE

C4.1 Symbols, legend, elevation, and relief interpreted with 90% accuracy

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Define elevation and relief, and explain how they are represented on maps.
2. Display topographic maps and aerial photographs, and discuss the uses of each.
3. Locate specific sites on a soil survey map of the community.
4. State four uses of topographic maps.
5. Identify uses of aerial photographs.
6. Explain how maps are scaled.

CONCEPT/DUTY AREA:

4. USING PLANT SCIENCE IN AGRICULTURAL PRODUCTION

COURSE:

AGRICULTURAL PRODUCTION MANAGEMENT (IV) 8012

TASK/COMPETENCY:

4.2 Prepare land use plan

PERFORMANCE OBJECTIVE

P4.2 Given choices for crop production and crop selection, prepare land use plan. Instructor must confirm that land use plan meets required conservation standards (Soil Conservation Service) and has suitable crop selection and crop rotation to maximize farm production.

CRITERION-REFERENCED MEASURE

C4.2 Land use plan meets conservation standards as prescribed by the Soil Conservation Service; suitable crop selection and rotation verified by instructor

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Obtain Soil Conservation Service map and determine:
    - a. soil capabilities
    - b. soil limitations
    - c. conservation requirements
    - d. cash crop production
    - e. livestock feed production.
2. Assess soil capabilities and requirements.
3. Select the crops to be grown.
4. Establish field layout and crop rotation plan.
5. Prepare a format for a land use plan.

CONCEPT/DUTY AREA:

4. USING PLANT SCIENCE IN AGRICULTURAL PRODUCTION

COURSE:

AGRICULTURAL PRODUCTION MANAGEMENT (IV) 8012

TASK/COMPETENCY:

4.3 Plan a cropping program

PERFORMANCE OBJECTIVE

P4.3 Given production capability of available land and a list of potential crops, plan a cropping program. The completed plan must include all specified components as verified by the instructor.

CRITERION-REFERENCED MEASURE

C4.3 Completed plan includes: a) soil productivity analysis; b) listing of all costs for each crop selected; c) projected income for each crop selected; and d) estimated credit needed for each crop selected; instructor's verification

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Analyze soil productivity of available land.
2. Identify crops that can be grown.
3. Prepare budget for each type of crop:
   a. list of costs
   b. projected income from crops.
4. Compare crop budgets.
5. Select crop or crops to be grown.
6. Prepare a list of the amounts of seed, fertilizer, and pesticide needed.
7. Assess credit needs for selected crops.

CONCEPT/DUTY AREA:

4. USING PLANT SCIENCE IN AGRICULTURAL PRODUCTION

COURSE:

AGRICULTURAL PRODUCTION MANAGEMENT (IV) 8012

TASK/COMPETENCY:

4.4 Determine the feasibility of purchasing crop insurance

PERFORMANCE OBJECTIVE

P4.4 Given a farm plan and a selected crop, determine the feasibility of purchasing crop insurance by developing a feasibility study. All specified components must be included.

CRITERION-REFERENCED MEASURE

C4.4 Completed feasibility study includes: a) value of crop; b) cost of insurance; c) explanation of decision

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Determine the acreage to be insured.
2. Estimate the anticipated yield.
3. Estimate the anticipated value of crop.
4. Determine cost of insuring crop.
5. Explain how to collect on an insured crop.

CONCEPT/DUTY AREA:

4. USING PLANT SCIENCE IN AGRICULTURAL PRODUCTION

COURSE:

AGRICULTURAL PRODUCTION MANAGEMENT (IV) 8012

TASK/COMPETENCY:

4.5 Interpret soil test report

PERFORMANCE OBJECTIVE

P4.5 Given a soil test report, interpret the report by developing fertilizer recommendations for an assigned crop. The recommendations must provide adequate nutrients to produce a crop as specified in the Agronomy Handbook.

CRITERION-REFERENCED MEASURE

C4.5 Fertilizer recommendations for assigned crop based on soil test report; Agronomy Handbook specifications

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Review cropping plan of previous and current years.
2. Obtain analysis of soil samples.
3. Analyze crop nutrient needs.
4. Analyze yield goals.
5. Assess fertilizer needs.
6. Evaluate fertilizer costs as it relates to yields.
7. Develop plan for fertilizer needs.

CONCEPT/DUTY AREA:

4. USING PLANT SCIENCE IN AGRICULTURAL PRODUCTION

COURSE:

AGRICULTURAL PRODUCTION MANAGEMENT (IV) 8012

TASK/COMPETENCY:

4.6 Develop budget for changing a crop program

PERFORMANCE OBJECTIVE

P4.6 Given a crop enterprise description and past crop and financial records, develop a budget for changing a crop program. All components of the budget plan must be included.

CRITERION-REFERENCED MEASURE

C4.6 Budget plan for changing crop program includes: a) appropriate crop program; b) resources; c) anticipated expenditures; d) current prices for crops sold; and e) an evaluation plan to be implemented during the growing season

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Study crop budgeting techniques for cash crops and livestock.
2. Select appropriate crop program.
3. Compute variable costs, fixed costs, and returns.
4. Review budgeting procedures.
5. Develop an evaluation plan.

CONCEPT/DUTY AREA:

4. USING PLANT SCIENCE IN AGRICULTURAL PRODUCTION

COURSE:

AGRICULTURAL PRODUCTION MANAGEMENT (IV) 8012

TASK/COMPETENCY:

4.7 Determine the fertilizer needs for a crop

PERFORMANCE OBJECTIVE

P4.7 Given a crop and a field for planting the crop, determine the fertilizer needs for the crop. Fertilizer recommendation must be within a 20% range of that determined by the instructor or agricultural extension agent.

CRITERION-REFERENCED MEASURE

C4.7 Fertilizer recommendation within 20% of that determined by the instructor or agricultural extension agent

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Take soil samples.
2. Submit soil samples for analysis.
3. Interpret soil test data.
4. Compare nutritional needs of a crop with soil sample data.

CONCEPT/DUTY AREA:

4. USING PLANT SCIENCE IN AGRICULTURAL PRODUCTION

COURSE:

AGRICULTURAL PRODUCTION MANAGEMENT (IV) 8012

TASK/COMPETENCY:

4.8. Develop plan for seed/plant needs

PERFORMANCE OBJECTIVE

P4.8 Given cropping plans, prices and availability of seeds/plants, and instructor's guidelines, develop plan for seed/plant needs. Crop selection, variety selection, and plant rate plans must agree with current conditions and seed/plant needs of the farm enterprise as verified by the instructor.

CRITERION-REFERENCED MEASURE

C4.8 Crop selection, variety selection, and plant rate plans agree with current conditions and seed/plant needs of the farm enterprise; instructor's verification

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Review cropping plans for current year.
2. Assess quantity and variety of seed/plant needs.
3. Obtain comparison yield trial results.
4. Determine price, availability, quality, and quantity of seeds and plants.
5. Identify suppliers of various plants/seeds.

CONCEPT/DUTY AREA:

4. USING PLANT SCIENCE IN AGRICULTURAL PRODUCTION

COURSE:

AGRICULTURAL PRODUCTION MANAGEMENT (IV) 8012

TASK/COMPETENCY:

4.9 Develop plan for pesticide need

PERFORMANCE OBJECTIVE

P4.9 Given current cropping plans, crop pest information, pesticide information, and availability and cost of materials and/or contract for custom application, develop a plan for pesticide need. Instructor must confirm that the plan will provide needed control with minimum environmental damage.

CRITERION-REFERENCED MEASURE

C4.9 Pesticide plan provides needed control with minimal environmental damage as confirmed by instructor

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Review cropping plan for current year.
2. Identify pests that commonly cause crop damage and loss.
3. Assess need for pesticides.
4. Assess costs of pesticide application.
5. Compare self-application to contract application (costs, time, efficiency).
6. Contact suppliers for price, availability, quality, and quantity.
7. Investigate other possibilities (cultural practices, natural insect enemies, biological means) of reducing insect infestation.

CONCEPT/DUTY AREA:

4. USING PLANT SCIENCE IN AGRICULTURAL PRODUCTION

COURSE:

AGRICULTURAL PRODUCTION TECHNOLOGY (III) 8010

TASK/COMPETENCY:

4.10 Identify seed samples

PERFORMANCE OBJECTIVE

P4.10 Given guidelines and 20 seed samples, identify 15 seed samples according to criteria established in instructor-provided guidelines.

CRITERION-REFERENCED MEASURE

C4.10 15 of 20 seed samples identified correctly; instructor-provided guidelines

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Relate the importance of seed identification.
2. List the parts of a seed.
3. List the characteristics of a seed.
4. Distinguish among different grass seeds.
5. Distinguish among different grain seeds.
6. Conduct a seed identification contest as an FFA activity.

CONCEPT/DUTY AREA:	**COURSE:**
4. USING PLANT SCIENCE IN AGRICULTURAL PRODUCTION	AGRICULTURAL PRODUCTION MANAGEMENT (IV) 8012

TASK/COMPETENCY:

4.11 List the criteria used in hybrid seed corn selection

PERFORMANCE OBJECTIVE

P4.11 Given instruction on hybrid corn, list 7 of the 10 criteria used in the selection of hybrid seed corn.

CRITERION-REFERENCED MEASURE

C4.11 Seven of the following ten criteria listed; 1) maturity, 2) stalk strength, 3) stand density, 4) yield, 5) height, 6) use, 7) resistant qualities, 8) cost, 9) versatility, 10) area to be planted

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Define hybrid seed.
2. Describe how hybrids are developed.
3. Describe how seed corn is propagated.
4. Compare characteristics of various seed varieties.

CONCEPT/DUTY AREA:

4. USING PLANT SCIENCE IN AGRICULTURAL PRODUCTION

COURSE:

AGRICULTURAL PRODUCTION MANAGEMENT (IV) 8012

TASK/COMPETENCY:

4.12 Prepare seedbeds

PERFORMANCE OBJECTIVE

P4.12 Given resources on land usage and access to a seedbed, prepare seedbeds for a particular crop. Procedures used must be consistent with established agricultural practices as outlined in an instructor-prepared checklist. All items must be rated acceptable.

CRITERION-REFERENCED MEASURE

C4.12 Instructor-prepared checklist; all items rated acceptable

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. List the characteristics of a good seedbed.
2. Determine when soil can be tilled during various seasons.
3. Identify advantages and disadvantages of plowing versus minimum tillage practices.
4. Identify equipment used in preparing seedbeds.
5. Explain relationship of the preparation of seedbed to the crop to be planted.
6. Define terminology associated with seedbed preparation.

CONCEPT/DUTY AREA:

4. USING PLANT SCIENCE IN AGRICULTURAL PRODUCTION

COURSE:

AGRICULTURAL PRODUCTION TECHNOLOGY (III) 8010

TASK/COMPETENCY:

4.13 Plant crops

PERFORMANCE OBJECTIVE

P4.13 Given a specific crop, a prepared site, and the necessary tools and supplies, plant the crop. All items on an instructor-provided checklist must be rated acceptable.

CRITERION-REFERENCED MEASURE

C4.13 Instructor-provided checklist; all items rated acceptable

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Prepare seedbed.
2. State in a written plan a description of seedbed preparation, planting method, and equipment needed.
3. Select proper planter or planting method.
4. Determine ideal soil condition needed for size of seed.
5. Inoculate seed, if needed.
6. Calibrate equipment for proper seed distribution.

CONCEPT/DUTY AREA:

4. USING PLANT SCIENCE IN AGRICULTURAL PRODUCTION

COURSE:

AGRICULTURAL PRODUCTION MANAGEMENT (IV) 8012

TASK/COMPETENCY:

4.14 Recommend crop management practices to improve volume of grain produced

PERFORMANCE OBJECTIVE

P4.14 Given instructor's guidelines, a simulated crop program, soil information, slope and drainage information, crop marketing information, and machinery and equipment available, recommend crop management practices that will improve volume of grain produced. Recommendation must be made in a written plan and must be consistent with accepted crop management practices as described in instructor's guidelines.

CRITERION-REFERENCED MEASURE

C4.14 Written crop management practices recommendation; instructor's guidelines

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Identify crop management practices.
2. Identify management practices that may be improved.
3. Relate management practices to improved production potential.
4. Apply approved management practices in an SOEP, if appropriate.

CONCEPT/DUTY AREA:

4. USING PLANT SCIENCE IN AGRICULTURAL PRODUCTION

COURSE:

AGRICULTURAL PRODUCTION MANAGEMENT (IV) 8012

TASK/COMPETENCY:

4.15 Plan a cultivation program

PERFORMANCE OBJECTIVE

P4.15 Given a specific crop and information on a site, plan a cultivation program. Plan must include method of seedbed preparation; weed control measures; and methods for the prevention of soil surface crusting

CRITERION-REFERENCED MEASURE

C4.15 Cultivation program plan; all specified components included

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Describe seedbed preparation, and list all equipment needed.
2. Discuss various weed control measures, and list advantages and disadvantages of each.
3. Identify ways to maintain a loose soil surface.

CONCEPT/DUTY AREA:

4. USING PLANT SCIENCE IN AGRICULTURAL PRODUCTION

COURSE:

AGRICULTURAL PRODUCTION MANAGEMENT (IV) 8012

TASK/COMPETENCY:

4.16 Describe weed control measures

PERFORMANCE OBJECTIVE

P4.16 Given an instructor-prepared worksheet on land usage, describe weed control measures for situations developed by the instructor. Measures selected should be consistent with Cooperative Extension Service recommendations, and a score of 100% must be achieved on worksheet.

CRITERION-REFERENCED MEASURE

C4.16 Instructor's worksheet; 100% accuracy

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Identify mechanical, chemical, biological, or other means of weed control.
2. Describe how weeds or weed seeds may be spread.
3. Identify equipment used in weed control.
4. Describe precautions to be followed in applying weed control measures.
5. Define terminology associated with controlling weeds.
6. Visit a site in which accepted weed control measures are practiced; compare with sites in which control measures have not been used.

CONCEPT/DUTY AREA:

4. USING PLANT SCIENCE IN AGRICULTURAL PRODUCTION

COURSE:

AGRICULTURAL PRODUCTION
TECHNOLOGY (III) 8010
OPERATING THE FARM
BUSINESS (V) 8014

TASK/COMPETENCY:

4.17 Identify disease control measures

PERFORMANCE OBJECTIVE

P4.17 Given a specific crop and site conditions, identify measures to control diseases in the crop. Measures must be appropriate for crop and site conditions as verified by the instructor.

CRITERION-REFERENCED MEASURE

C4.17 Disease control measures appropriate for crop and site conditions as verified by instructor

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Identify the problem diseases.
2. Identify cultural methods for prevention and control.
3. Identify chemical methods for prevention.
4. Determine application method.

CONCEPT/DUTY AREA:

4. USING PLANT SCIENCE IN AGRICULTURAL PRODUCTION

COURSE:

AGRICULTURAL PRODUCTION MANAGEMENT (IV) 8012

TASK/COMPETENCY:

4.18 Develop crop marketing plan

PERFORMANCE OBJECTIVE

P4.18 Given surplus crop or acreage opportunities with profit potential, develop crop marketing plan. Plan must be feasible and produce maximum profit to the farm enterprise as verified by the instructor.

CRITERION-REFERENCED MEASURE

C4.18 Crop marketing plan feasible with maximum profit production; confirmed by instructor

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Assess surplus quantities of crops on the farm.
2. Identify potential for a more profitable, marketable crop.
3. Determine alternative marketing strategies:
   a. investigate cash crop opportunities
   b. investigate use of surplus for livestock feed.

CONCEPT/DUTY AREA:

4. USING PLANT SCIENCE IN AGRICULTURAL PRODUCTION

COURSE:

AGRICULTURAL PRODUCTION MANAGEMENT (IV) 8012

TASK/COMPETENCY:

4.19 Develop plan for purchase and operation of irrigation system

PERFORMANCE OBJECTIVE

P4.19 Given land use and cropping plan, develop plan for purchase and operation of irrigation system. Plan must include: water availability; sources of water; permits needed; schedule of irrigation needs; irrigation equipment costs; maintenance services; and statement of economic value to the farm enterprise.

CRITERION-REFERENCED MEASURE

C4.19 Irrigation system plan complete and accurate; instructor's verification

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Review land use plan and cropping plan.
2. Assess water availability.
3. Analyze sources of water.
4. Assign small group study of various types of irrigation systems.
5. Compare feasible alternative irrigation systems.
6. Explain where to obtain necessary irrigation permits.
7. Assess additional labor requirements.
8. Assess financial implications.
9. Prepare schedule of irrigation needs for each crop.
10. Prepare schedule of irrigation maintenance service.

CONCEPT/DUTY AREA:

4. USING PLANT SCIENCE IN AGRICULTURAL PRODUCTION

COURSE:

AGRICULTURAL PRODUCTION MANAGEMENT (IV) 8012

TASK/COMPETENCY:

4.20 Develop a contract for providing custom crop services

PERFORMANCE OBJECTIVE

P4.20 Given instruction on contracts and a situation involving custom crop services, develop a contract for providing custom crop services. The contract must contain the following elements: competent parties; legal subject matter; an offer; an acceptance; a consideration.

CRITERION-REFERENCED MEASURE

C4.20 Contract for providing custom crop services includes: competent parties; legal subject matter; an offer; an acceptance; a consideration

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Determine the prevailing rates for custom crop service.
2. Identify the five essential elements of a contract.
3. Compare the cost of custom services to farm-provided machinery and labor.

CONCEPT/DUTY AREA:

4. USING PLANT SCIENCE IN AGRICULTURAL PRODUCTION

COURSE:

AGRICULTURAL PRODUCTION MANAGEMENT (IV) 8012

TASK/COMPETENCY:

4.21 Identify types of grain damage

PERFORMANCE OBJECTIVE

P4.21 Given six samples of grain with different types of damage, identify three types of damage.

CRITERION-REFERENCED MEASURE

C4.21 Three of six types of damaged grain samples identified correctly

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Identify different kinds of grain.
2. Explain ways grain can be damaged.
3. Secure samples of damaged grain from local seed or feed dealer.

CONCEPT/DUTY AREA:

4. USING PLANT SCIENCE IN AGRICULTURAL PRODUCTION

COURSE:

AGRICULTURAL PRODUCTION MANAGEMENT (IV) 8012

TASK/COMPETENCY:

4.22 Harvest crops

PERFORMANCE OBJECTIVE

P4.22 Given a specific crop and site and the necessary equipment, harvest crop. The crop must be harvested at proper maturity and with less than 5% loss during harvesting as verified by the instructor.

CRITERION-REFERENCED MEASURE

C4.22 Crop harvested at proper maturity with less than 5% loss as verified by instructor

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Determine moisture content of crop.
2. Select proper harvesting equipment.
3. Describe preparation and maintenance of harvesting equipment.
4. Check yield loss during harvesting.
5. Develop a harvesting plan if a harvesting site is unavailable.

CONCEPT/DUTY AREA:

4. USING PLANT SCIENCE IN AGRICULTURAL PRODUCTION

COURSE:

AGRICULTURAL PRODUCTION
MANAGEMENT (IV) 8012
OPERATING THE FARM
BUSINESS (V) 8014

TASK/COMPETENCY:

4.23 Dry grain

PERFORMANCE OBJECTIVE

P4.23 Given a specific crop and the necessary tools and equipment, dry grain according to procedures specified in instructor's checklist. All items on the checklist must be rated acceptable.

CRITERION-REFERENCED MEASURE

C4.23 Instructor-prepared checklist; all items rated acceptable

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Select proper drying procedure.
2. Sample grain for insect damage.
3. Determine moisture content of grain.
4. Treat grain to prevent insect damage.
5. Store grain properly.

CONCEPT/DUTY AREA:

4. USING PLANT SCIENCE IN AGRICULTURAL PRODUCTION

COURSE:

AGRICULTURAL PRODUCTION MANAGEMENT (IV) 8012

TASK/COMPETENCY:

4.24 Prepare inventory of harvested crops

PERFORMANCE OBJECTIVE

P4.24 Given a farm cropping plan and crop yields, prepare an inventory by calculating the total volume of each crop produced. The inventory must include a list of each crop harvested. Volume calculated must be within 5% of that calculated by instructor.

CRITERION-REFERENCED MEASURE

C4.24 Calculations of each crop harvested within 5% of instructor's calculations

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Calculate the total acres of each crop harvested.
2. Determine the average yield per acre.
3. Calculate the total volume of grain harvested.
4. Compare computer software inventory packages.

CONCEPT/DUTY AREA:

4. USING PLANT SCIENCE IN AGRICULTURAL PRODUCTION

COURSE:

AGRICULTURAL PRODUCTION MANAGEMENT (IV) 8012

TASK/COMPETENCY:

4.25 Determine weight loss incurred in drying grain

PERFORMANCE OBJECTIVE

P4.25 Given moisture content and shrinkage tables, quantity of grain, and moisture content before and after drying, determine the weight loss incurred by drying the grain. Table must be read correctly and all calculations must be 100% accurate.

CRITERION-REFERENCED MEASURE

C4.25 Weight loss determination correct; all calculations 100% accurate

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Read a moisture content and shrinkage table.
2. Define moisture content.
3. Calculate percentages.
4. Determine weight before and after drying.

CONCEPT/DUTY AREA:

4. USING PLANT SCIENCE IN AGRICULTURAL PRODUCTION

COURSE:

AGRICULTURAL PRODUCTION TECHNOLOGY (III) 8010
OPERATING THE FARM BUSINESS (V) 8014

TASK/COMPETENCY:

4.26 Prepare a crop exhibit

PERFORMANCE OBJECTIVE

P4.26 Given exhibition guidelines, prepare a crop exhibit. Exhibit must meet the criteria for the show or fair as specified in the guidelines.

CRITERION-REFERENCED MEASURE

C4.26 Crop exhibit prepared; all exhibition criteria successfully met

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Determine show or fair in which exhibit may be entered.
2. Select samples for exhibit.
3. Invite exhibition winners to speak at an FFA meeting.

EQUIPMENT AND MATERIALS

Task 4.1

Soil survey map of locality
USDA aerial photographs
Masking tape
Pocket sterioscopes

Task 4.2

Crop record book
Soil conservation map and plan
Soil Conservation Service standards
Drawing board and supplies
Agricultural stabilization and conservation service plan

Task 4.3

Department of Agriculture crop and livestock handbook
Farm equipment and supply catalogues
Production marketing publications
Calculator

Task 4.4

Farm plan

Task 4.5

Soil auger
Soil test report

Task 4.6

Past crop and financial records
Agricultural publications
Crop enterprise description
Calculator
Planning prices

Task 4.7

Soil auger
Bucket
Shovel
Hand trowel
Plastic bags/containers

Task 4.8

Cropping plans
Instructor-prepared guidelines
Calculator
Crop record book
Seed/plant agricultural publications

Task 4.9

Cropping plan
Publications containing pesticide information
Calculator
Crop record book

Task 4.10

Seed samples
Instructor-prepared guidelines

Task 4.11

Publications containing descriptions of hybrid seed corn varieties

Task 4.12

Hand/power equipment
Instructor-prepared checklist
Fertilizer
Herbicides

Task 4.13

Planting equipment
Crops to be planted
Instructor-provided checklist

Task 4.14

Instructor's guidelines
Simulated crop program including soil, site, and crop marketing information, and available machinery

Task 4.15

Cropping plan

Task 4.16

Photographs/slides of equipment used in weed control
Cooperative Extension Service recommendations for weed control
Instructor-prepared materials: Worksheet on weed control measures
Weed control situations

Task 4.17

Cropping plan

Task 4.18

Budgeting information
Farm product price list

Calculator
Agricultural publications containing crop information

Task 4.19

Cropping plan

Calculator

Task 4.20

Instructor-provided case situation
Sample contracts

Task 4.21

Grain samples

Task 4.22

Harvesting equipment

Task 4.23

Instructor-prepared checklist
Equipment for storing grain

Task 4.24

Cropping plan
Record of crop yields

Task 4.25

Weight loss and shrinkage tables for grain

Task 4.26

Exhibition guidelines for show/fair

RESOURCES

Task 4.2

Software: Crop Management Utilities. (Apple II). AAVIM.

Task 4.3

Slidefilm: Plan the Cropping System and Estimate Value of Crop Production. Vocational Agriculture Service.

Task 4.5

Filmstrip/Cassette: "Plant Nutrition." Soil: The Growth Medium. Prentice-Hall Media.
Software: Soil Test Interpreter. (Apple II). AAVIM.
Transparencies: Soil Testing and Fertility. Vocational Agriculture Service.

Task 4.7

Filmstrip/Cassette: "Selection and Application." Fertilizers and Soil Fertility. Prentice-Hall Media.
Software: Fertilizer Quantity. (Apple, TRS). AAVIM.

Task 4.11

Filmstrip/Cassette: "Hybrid Seed Production and Seed Selection." Corn Production. Prentice-Hall Media.
Slidefilm: Producing Hybrid Seed Corn. Vocational Agriculture Service.

Task 4.16

Transparencies: Weed Control. Vocational Agriculture Service.

Task 4.21

Slides: Corn Problems: Tasseling to Maturity. Vocational Agriculture Service.
Diseases of Soybeans. Vocational Agriculture Service.
Diseases of Wheat. Vocational Agriculture Service.

REFERENCES

Task 4.1

Forestry in Agricultural Education in Virginia. Virginia Department of Education.

Task 4.2

Field Arrangement Principles. Vocational Agriculture Service.
Planning the Cropping System. Vocational Agriculture Service.

Task 4.3

Planning the Cropping System. Vocational Agriculture Service.

Task 4.4

Agricultural Finance. Lee.
Using Insurance in the Farm Business. Vocational Agriculture Service.

Task 4.5

Agronomy Handbook. Virginia Cooperative Extension Service.
Collecting and Preparing Soil Samples for Testing. Vocational Agriculture Service.
Nature of Soil Acidity and Major Plant Nutrients. Vocational Agriculture Service.
pH Test for Soil Acidity. Vocational Agriculture Service.

Task 4.6

None identified

Task 4.7

Agronomy Handbook. Virginia Cooperative Extension Service.
Field Crop Nutrition. Ohio Agricultural Education Curriculum Materials Service.
Hunger Signs in Crops. Vocational Agriculture Service.
Planning a Fertilizer Program. Vocational Agriculture Service.
Planning the Nitrogen Program. Vocational Agriculture Service.

Task 4.8

None identified

Task 4.9

Applying Pesticides. AAVIM.
Crop Chemicals. AAVIM.
Conservation Farming. Hughes.

Task 4.10

None identified

Task 4.11

Seed Production of Corn, Soybeans, and Small Grains. Ohio Agricultural Education Curriculum Materials Service.

Task 4.12

None identified

Task 4.13

Agronomy Handbook. Virginia Cooperative Extension Service.

Task 4.14

Working in Plant Science. Bishop and others.

Tasks 4.15-4.16

Conservation Farming. Hughes.
Controlling Weeds. Vocational Agriculture Service.
Crop Production: Vegetable Grower. V-TECS.

Task 4.17

Conservation Farming. Hughes.

Task 4.18

Marketing Agricultural Products. Ohio Agricultural Education Curriculum Materials Service.

Task 4.19

Planning for an Irrigation System. AAVIM.

Task 4.20

The Law and You. Ohio Agricultural Education Curriculum Materials Service.

Task 4.21

Common Problems of Soybeans. Vocational Agriculture Service.
Corn Insects and Their Control. Vocational Agriculture Service.
Field Crop Diseases. Ohio Agricultural Education Curriculum Materials Service.
Insect Pests of Field Crops and Stored Grains. Ohio Agricultural Education Curriculum Materials Service.
Wheat Diseases. Vocational Agriculture Service.
Working in Plant Science. Bishop and others.

Tasks 4.22-4.23

None identified

Task 4.24

Farming and the Computer. AAVIM.

Tasks 4.25-4.26

None identified

CONCEPT/DUTY AREA

5. MANAGING NATURAL RESOURCES

TASKS/COMPETENCIES

5.1 Identify possible solutions to pollution problems

5.2 Describe the sources of water for home and industrial uses

5.3 List ways consumers use water

5.4 Describe how agriculture and the ecosystem are interrelated

5.5 Describe how agriculture and the environment are interrelated

5.6 Describe effects of air pollution

5.7 Identify common vegetation materials used for resource conservation

5.8 Identify practices to control soil erosion

5.9 Describe the effects of water pollution on the environment

5.10 Select the best method to control water pollution

5.11 Describe federal and state agencies responsible for protecting the environment

5.12 Develop a conservation plan

5.13 Interpret programs of soil conservation agencies

5.14 Estimate the water needs for a farm or natural resource enterprise

5.15 Develop a plan for feeding wildlife

5.16 Identify species of game, waterfowl, and fish

5.17 Develop a plan for constructing a fish pond

5.18 Develop recommendations for maintaining ponds

5.19 Determine proper stocking rate in pond

5.20 Identify elements for maintenance of a marsh for wildlife habitat

5.21 Raise game birds

5.22 Develop wildlife management plan

CONCEPT/DUTY AREA:

5. MANAGING NATURAL RESOURCES

COURSE:

AGRICULTURAL PRODUCTION TECHNOLOGY (III) 8010

TASK/COMPETENCY:

5.1 Identify possible solutions to pollution problems

PERFORMANCE OBJECTIVE

P5.1 Given information on the environment and instructor's guidelines, identify possible solutions to pollution problems in a written report. Report must be three to five pages and meet criteria specified in instructor's guidelines.

CRITERION-REFERENCED MEASURE

C5.1 Three to five page written report; instructor's guidelines

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Define environment and ecosystem.
2. Explain the importance of photosynthesis and respiration.
3. Identify biogeochemical cycles such as water, carbon, nitrogen, phosphorous, calcium, and sulfur.
4. Describe pollution caused by nature (volcanoes, earthquakes, dust storms, and salt spray from ocean storms).
5. Explain ways people cause pollution (presence of large quantities of phosphorous, nitrogen, sulfur dioxide, heavy metals, hydrocarbons, radioactive materials, solid waste, sewage, and excess heat).
6. List possible solutions to pollution problems.
7. Explain conservation techniques, such as recycling.
8. Name alternate sources of energy that cause fewer pollution problems.
9. Explain the need for land-use planning.
10. Identify sources of pollution in the local community.
11. Invite a person knowledgeable in environmental protection to speak to the class.

CONCEPT/DUTY AREA:

5. MANAGING NATURAL RESOURCES

COURSE:

AGRICULTURAL PRODUCTION TECHNOLOGY (III) 8010

TASK/COMPETENCY:

5.2 Describe the sources of water for home and industrial uses

PERFORMANCE OBJECTIVE

P5.2 Given resources and an instructor-prepared worksheet, describe the sources of water for home and industrial uses, including the name of each water source, definition or explanation, estimation of local availability, and projection of long-term availability with 90% accuracy.

CRITERION-REFERENCED MEASURE

C5.2 Instructor-prepared worksheet; 90% accuracy

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Identify ground water sources (wells, springs, and seeps).
2. Identify surface water sources (ponds, lakes, streams, irrigation ditches, and cisterns).
3. Contact the Water Control Board for data on test wells, past water usage patterns, and projected water demand.
4. Analyze the feasibility of developing additional water sources.
5. Select a geographical area within the locality, and identify sources of water.
6. Interview long-time residents of the geographic area to determine trends associated with the water supply.

CONCEPT/DUTY AREA:

5. MANAGING NATURAL RESOURCES

COURSE:

AGRICULTURAL PRODUCTION TECHNOLOGY (III) 8010

TASK/COMPETENCY:

5.3 List ways consumers use water

PERFORMANCE OBJECTIVE

P5.3 Given resources on water as a natural resource and the categories of consumers, including individuals, businesses or industries, farmers, and wildlife, list at least five usages of water for at least three categories of consumers on an instructor-prepared worksheet.

CRITERION-REFERENCED MEASURE

C5.3 Five usages of water for at least three categories of consumers listed on instructor-prepared worksheet

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Describe the ways that water is used by individuals, businesses, farmers, and wildlife.
2. Compare usage lists to determine likenesses and differences.
3. Explain the distinction between consumptive and non-consumptive uses of water.
4. Maintain a log of water usage for one week; determine ways consumption could be reduced.

CONCEPT/DUTY AREA:

5. MANAGING NATURAL RESOURCES

COURSE:

AGRICULTURAL PRODUCTION TECHNOLOGY (III) 8010

TASK/COMPETENCY:

5.4 Describe how agriculture and the ecosystem are interrelated

PERFORMANCE OBJECTIVE

P5.4 Given instruction on environmental protection and instructor's guidelines, describe how agriculture and the ecosystem are interrelated in a three- to five-page report. The description must include at least five factors that illustrate this interrelationship and be written according to specifications in the guidelines.

CRITERION-REFERENCED MEASURE

C5.4 Three-to five-page written report; instructor's guidelines

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Define terminology associated with agriculture and the ecosystem.
2. Identify the benefits and losses that have occurred because of modern agricultural practices.
3. Explain the relationship between modern agricultural practices and the presence of native wildlife and plant populations.
4. Describe the effects of modern agricultural practices upon the water supply of an ecosystem.
5. Arrange a field trip to a nearby farm, and determine the impact of agricultural practices upon the ecosystem.

CONCEPT/DUTY AREA:

5. MANAGING NATURAL RESOURCES

COURSE:

AGRICULTURAL PRODUCTION TECHNOLOGY (III) 8010

TASK/COMPETENCY:

5.5 Describe how agriculture and the environment are interrelated

PERFORMANCE OBJECTIVE

P5.5 Given resources on environmental protection, describe how agriculture and the environment are interrelated in a five-minute oral report to the class. The report must include at least five factors that illustrate this interrelationship and be judged acceptable according to instructor-prepared checklist.

CRITERION-REFERENCED MEASURE

C5.5 Five-minute oral report; instructor-prepared checklist

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Define terminology associated with agriculture and the environment.
2. Identify the benefits and losses that have occurred because of agriculture.
3. Describe the effects of agriculture on the environment.
4. Determine the long-range effects of inorganic fertilizers, pesticides, manure, and crop residues upon our environment.
5. Select a country or region of the world, and report on agricultural efforts and the impact on the environment (destruction of rain forests in South America; effects of irrigation canals on the Everglades; etc.).

CONCEPT/DUTY AREA:

5. MANAGING NATURAL RESOURCES

COURSE:

AGRICULTURAL PRODUCTION TECHNOLOGY (III) 8010

TASK/COMPETENCY:

5.6 Describe effects of air pollution

PERFORMANCE OBJECTIVE

P5.6 Given a worksheet on air pollution, describe effects of air pollution by identifying four air pollutants and describing their effects on the environment with 100% accuracy. Descriptions must include the name of the air pollutant, the major source, and the environmental effect.

CRITERION-REFERENCED MEASURE

C5.6 Instructor-prepared worksheet; 100% accuracy

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Identify the various characteristics of unpolluted air.
2. Prepare a list of air pollutants and explain their identifying properties.
3. Identify the locations of local sources of air pollution.
4. Identify air pollutants that occur most commonly in natural resources management.
5. Determine the effects of an air pollutant on plant and animal life.
6. Invite a representative of the Air Pollution Control Board to be a guest speaker at an FFA meeting.
7. Conduct an experiment on the effects of air pollution by attempting to germinate and grow seedlings using air that contains pollutants.
8. Discuss the controversy surrounding acid rain.

CONCEPT/DUTY AREA:

5. MANAGING NATURAL RESOURCES

COURSE:

AGRICULTURAL PRODUCTION TECHNOLOGY (III) 8010

TASK/COMPETENCY:

5.7 Identify common vegetation materials used for resource conservation

PERFORMANCE OBJECTIVE

P5.7 Given information on protecting the environment and twenty different vegetation samples, identify common vegetation materials used for resource conservation by naming fifteen of the samples correctly.

CRITERION-REFERENCED MEASURE

C5.7 Fifteen of twenty vegetation materials named correctly

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Identify plants commonly used for resource conservation in the locality.
2. Describe the characteristics of the vegetation materials used for resource conservation.
3. Select three sites requiring vegetation materials for resource conservation; have students develop a written plan for the placement of vegetation materials on the site.
4. Identify application situations for each of the common vegetation materials.
5. Collect samples of a variety of vegetation materials.
6. Examine local sites where vegetation has been used for resource conservation. Have students identify the plants, and discuss their suitability to the site.

CONCEPT/DUTY AREA:

5. MANAGING NATURAL RESOURCES

COURSE:

AGRICULTURAL PRODUCTION TECHNOLOGY (III) 8010

TASK/COMPETENCY:

5.8 Identify practices to control soil erosion

PERFORMANCE OBJECTIVE

P5.8 Given the opportunity to examine a particular site affected by erosion, identify practices that could be employed to control the soil erosion found at the site. Practices must be consistent with Soil Conservation Service recommendations and approved by the instructor.

CRITERION-REFERENCED MEASURE

C5.8 Erosion control practices identified; consistent with Soil Conservation Service recommendations as verified by instructor

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Describe soil erosion.
2. List the major factors causing soil erosion.
3. Explain the consequences of uncontrolled soil erosion.
4. Identify factors affecting rates of soil erosion.
5. Identify control practices that should be implemented for eroded sites.
6. Survey the local community, and identify sites where the soil is eroding. Determine the degree of erosion, cause of the erosion, and possible control methods.

CONCEPT/DUTY AREA:

5. MANAGING NATURAL RESOURCES

COURSE:

AGRICULTURAL PRODUCTION TECHNOLOGY (III) 8010

TASK/COMPETENCY:

5.9 Describe effects of water pollution on the environment

PERFORMANCE OBJECTIVE

P5.9 Given classroom discussion of water pollution, describe the effects of water pollution on the environment by identifying a minimum of five water pollutants and describing their effects. Description must include the following: the name of the water pollutant, major source(s) of the pollutant, the effect upon the environment, and the effect of human exposure.

CRITERION-REFERENCED MEASURE

C5.9 Five sources of water pollutants described with the following information provided for each source: a) name of water pollutant; b) major source or sources of water pollutant; c) effect upon environment; and d) effect of human exposure

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Identify local sources of water pollutants.
2. Analyze the effects of a water pollutant on the environment.
3. Define terminology associated with water pollution.
4. Conduct an experiment by attempting to germinate and grow seedlings using polluted water.

CONCEPT/DUTY AREA:

5. MANAGING NATURAL RESOURCES

COURSE:

AGRICULTURAL PRODUCTION TECHNOLOGY (III) 8010

TASK/COMPETENCY:

5.10 Select the best method to control water pollution

PERFORMANCE OBJECTIVE

P5.10 Given a series of ten water pollution problems and a variety of proposed control measures for each, select the best method to control water pollution for at least seven of the ten problems.

CRITERION-REFERENCED MEASURE

C5.10 Best method to control water pollution selected in at least seven of ten cases

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. State reasons for controlling water pollution.
2. Collect samples of water from several sources; analyze each sample.
3. Explain several control methods used for water pollution.
4. Describe the laws and regulations enacted to control water pollution.
5. Conduct a field trip to local sites in which water pollution control measures are employed.

CONCEPT/DUTY AREA:

5. MANAGING NATURAL RESOURCES

COURSE:

AGRICULTURAL PRODUCTION TECHNOLOGY (III) 8010

TASK/COMPETENCY:

5.11 Describe federal and state agencies responsible for protecting the environment

PERFORMANCE OBJECTIVE

P5.11 Given resources on environmental protection and instructor-provided guidelines for a panel discussion, describe federal and state agencies responsible for protecting the environment. Description should be included in a presentation on a specified topic.

CRITERION-REFERENCED MEASURE

C5.11 Participation in panel discussion; instructor-provided guidelines

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Identify reference materials.
2. Explain the purpose of various agencies such as the Virginia Soil and Water Conservation Commission, Soil Conservation Service, and the Environmental Protection Agency.
3. Organize class in small groups, and assign each an agency to study. Have each group present a panel discussion with individual students responsible for discussing various facets of the agency.
4. Plan an FFA follow-up activity by inviting representatives of various agencies to serve as guest speakers at an FFA meeting.

CONCEPT/DUTY AREA:	**COURSE:**
5. MANAGING NATURAL RESOURCES	OPERATING THE FARM BUSINESS (V) 8014

TASK/COMPETENCY:

5.12 Develop a conservation plan

PERFORMANCE OBJECTIVE

P5.12 Given the opportunity to visit two field sites, develop a conservation plan. The plan must include the following information for each site: 1) identification of the existing or potential conservation problem; 2) a proposed method of correcting each problem; 3) the conservation practice to be employed; 4) an estimated cost of correcting each problem; 5) effects of not correcting the problem. All components must be included to be rated acceptable.

CRITERION-REFERENCED MEASURE

C5.12 Plan for two sites developed; all components included

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Identify existing or potential conservation problem(s).
2. Compile a list of conservation practices used in the local community.
3. Determine one or more plans that could be used to correct a specific problem.
4. Explain the conservation practices that might be used to correct or lessen the problem.
5. Estimate the costs associated with correcting the problem.
6. Define terminology associated with conservation, such as puddling, Universal Soil Loss Equation, Land Capability Classification, no-till, and windbreaks.
7. Invite a local soil conservationist to conduct the class at the field trip site in order for students to hear a professional who handles conservation problems daily.

CONCEPT/DUTY AREA:

5. MANAGING NATURAL RESOURCES

COURSE:

OPERATING THE FARM BUSINESS (V) 8014

TASK/COMPETENCY:

5.13 Interpret programs of soil conservation agencies

PERFORMANCE OBJECTIVE

P5.13 Given resources on protecting the soil component of the environment, interpret the programs of various soil conservation agencies on an instructor-prepared written test with 90% accuracy.

CRITERION-REFERENCED MEASURE

C5.13 Instructor-prepared written test; 90% accuracy

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Explain the mission or purpose of each of the following agencies:
    a. Agricultural Stabilization and Conservation Service
    b. Bureau of Land Management
    c. National Association of Conservation Districts
    d. Soil Conservation Service
    e. Soil Conservation Society of America
    f. Virginia Soil and Water Conservation Districts.
2. Determine the funding source of each agency.
3. Identify the major programs addressed by soil conservation agencies.
4. Relate the programs offered by a conservation agency to a farm or natural resources business.
5. Invite a representative of a soil conservation agency to speak at an FFA meeting.
6. Identify locations in the community (library, extension service office) where research can be conducted on various agencies.

CONCEPT/DUTY AREA:

5. MANAGING NATURAL RESOURCES

COURSE:

OPERATING THE FARM BUSINESS (V) 8014

TASK/COMPETENCY:

5.14 Estimate the water needs for a farm or natural resource enterprise

PERFORMANCE OBJECTIVE

P5.14 Given water use data for a farm or a natural resource enterprise, estimate the water needs for the site. Estimated water needs must be within 10% of instructor's estimate.

CRITERION-REFERENCED MEASURE

C5.14 Estimate of water needs; within 10% of instructor's estimate

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Identify the various uses for water on the farm or natural resource enterprise site.
2. Determine human consumption needs for water.
3. Determine livestock consumption needs for water.
4. Determine lawn, garden, and crop consumption needs for water.
5. Identify water needs for a natural resource enterprise.
6. Compute the total gallons of water needed for a given time period.

CONCEPT/DUTY AREA:

5. MANAGING NATURAL RESOURCES

COURSE:

AGRICULTURAL PRODUCTION TECHNOLOGY (III) 8010

TASK/COMPETENCY:

5.15 Develop a plan for feeding wildlife

PERFORMANCE OBJECTIVE

P5.15 Given a situation involving a wildlife habitat, develop a plan to provide food for animal and bird wildlife species. The plan must be judged acceptable according to instructor-prepared checklist regarding the appropriateness of materials selected, the practicality and cost of plan implementation, and the provisions for the long-term supplying of natural food sources.

CRITERION-REFERENCED MEASURE

C5.15 Plan rated acceptable; instructor-prepared checklist

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. List ways of attracting animals and birds to a natural habitat.
2. Identify plants or trees that provide food and/or cover for animals and birds.
3. Determine natural food sources for animals and birds.
4. List symptoms of wildlife starvation.
5. Determine if additional plantings of food sources would be necessary.
6. Explain process of supplementing natural food resources during shortages or severe weather.
7. Plant wildlife food patches as an FFA-sponsored activity.

CONCEPT/DUTY AREA:

5. MANAGING NATURAL RESOURCES

COURSE:

AGRICULTURAL PRODUCTION TECHNOLOGY (III) 8010

TASK/COMPETENCY:

5.16 Identify species of game, waterfowl, and fish

PERFORMANCE OBJECTIVE

P5.16 Given pictures, illustrations, or field sightings, identify eight of ten species of game, waterfowl, and fish.

CRITERION-REFERENCED MEASURE

C5.16 Eight of ten identifications correct

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Compile a list of game, waterfowl, and fish species indigenous to the area.
2. Identify examples of pictorial and/or written descriptions of each species, including appropriate keys.
3. List the major characteristics of the species.
4. Identify the characteristics used to distinguish one species from another.
5. Describe the natural habitat characteristics for each species.
6. State feeding and migration patterns of various species.
7. Arrange field trips to observe wildlife species in their natural habitat.
8. Maintain a written log detailing game, waterfowl, and fish observed.

CONCEPT/DUTY AREA:

5. MANAGING NATURAL RESOURCES

COURSE:

AGRICULTURAL PRODUCTION TECHNOLOGY (III) 8010

TASK/COMPETENCY:

5.17 Develop a plan for constructing a fish pond

PERFORMANCE OBJECTIVE

P5.17 Given a written description of or access to a suitable site, develop a plan for constructing a fish pond. The construction plan must follow Soil Conservation Service recommendations for the site as verified by the instructor.

CRITERION-REFERENCED MEASURE

C5.17 Construction plan developed in accordance with Soil Conservation Service recommendations for site; instructor's verification

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Describe the characteristics of a desirable pond site.
2. Determine the minimum pond depth required to supply fish production and recreational needs.
3. Identify the properties of soils at the pond site.
4. Explain procedure to contact an engineer, technician, or other resource person to prepare plans, specifications, and cost figures.
5. Describe techniques required to prepare the site for pond construction.
6. Identify locations of necessary spillways and dams.
7. Describe method of sealing ponds to prevent leakage.
8. Explain procedure used in establishing vegetation around pond and on dam to prevent soil erosion.
9. Determine stocking rates of desirable species.
10. Identify lifesaving equipment needed at the site.

CONCEPT/DUTY AREA:

5. MANAGING NATURAL RESOURCES

COURSE:

OPERATING THE FARM BUSINESS
(V) 8014

TASK/COMPETENCY:

5.18 Develop recommendations for maintaining ponds

PERFORMANCE OBJECTIVE

P5.18 Given access to an established fish pond and case study records, develop recommendations for maintaining the pond to ensure that an optimal production of desirable fish is harvested. Recommendations must be rated acceptable according to an instructor-prepared checklist.

CRITERION-REFERENCED MEASURE

C5.18 Recommendations for pond maintenance; instructor-prepared checklist

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Perform necessary inspections of the pond site.
2. Evaluate the condition of ground covers at the pond site.
3. Identify ways to provide protection to shoreline from wave action.
4. Explain methods to control burrowing animals, beavers, and insects at the pond site.
5. Determine availability of desirable species, and recommend methods to control undersirable species.
6. Determine food availability for fish.
7. Evaluate water quality of the pond.
8. Record growth rate of each species.
9. Determine the condition of lifesaving equipment.
10. Arrange for an SOEP in pond maintenance.
11. Apply for an FFA proficiency award.

CONCEPT/DUTY AREA:

5. MANAGING NATURAL RESOURCES

COURSE:

OPERATING THE FARM BUSINESS (V) 8014

TASK/COMPETENCY:

5.19 Determine proper stocking rate in ponds

PERFORMANCE OBJECTIVE

P5.19 Given a case study, determine proper stocking rate in ponds for managing fish. Rates must be consistent with the recommendations of the Virginia Department of Game and Inland Fisheries.

CRITERION-REFERENCED MEASURE

C5.19 Stocking rates consistent with recommendations of Virginia Department of Game and Inland Fisheries

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Calculate surface and running water volume.
2. Explain method of collecting fish to determine average size in the pond.
3. Identify procedure to remove undesirable species and undersized fish in order to reach optimal stocking level.
4. Identify methods for adequate removal of harvestable fish.
5. Invite a representative of the Department of Game and Inland Fisheries to discuss stocking rates of various species.
6. Arrange with a local landowner for students to provide help in draining a pond.

CONCEPT/DUTY AREA:

5. MANAGING NATURAL RESOURCES

COURSE:

OPERATING THE FARM BUSINESS (V) 8014

TASK/COMPETENCY:

5.20 Identify elements for maintenance of a marsh for wildlife habitat

PERFORMANCE OBJECTIVE

P5.20 Given access to a suitable marsh land, identify elements for maintaining a marsh for wildlife habitat in a written report. Report must include an inventory of present plant life, a determination of the best-suited plant species, and a description of planting-area preparation.

CRITERION-REFERENCED MEASURE

C5.20 Written report includes: a) inventory of present plant life; b) determination of best-suited plant species; and c) description of planting-area preparation

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Define terminology associated with marshes and wetlands.
2. Describe existing plant material and wildlife found on marsh site.
3. Determine type of marsh and salt content of water.
4. Identify procedures to secure suitable plant materials for type of march identified.
5. Explain methods used to prepare area for seedlings or planting.

CONCEPT/DUTY AREA:

5. MANAGING NATURAL RESOURCES

COURSE:

OPERATING THE FARM BUSINESS (V) 8014

TASK/COMPETENCY:

5.21 Raise game birds

PERFORMANCE OBJECTIVE

P5.21 Given the necessary supplies, equipment, and a suitable location, raise game birds. Performance must be acceptable according to instructor-prepared standards established for the species, and records must be maintained for three months to show that standards have been met or exceeded.

CRITERION-REFERENCED MEASURE

C5.21 Management records for three-month period; instructor-prepared standards

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Select breeding stock.
2. Secure and prepare equipment for incubating, hatching, and brooding eggs and chicks.
3. Incubate eggs.
4. Identify optimum temperature and moisture conditions for raising birds.
5. Trim bills and clip wings.
6. Identify and treat diseases.
7. Explain methods of controlling predatory animals.
8. Conduct sale of birds.
9. Maintain production and financial records.
10. Arrange for students to raise birds as part of an SOEP.
11. Explain all costs associated with raising birds.

CONCEPT/DUTY AREA:

5. MANAGING NATURAL RESOURCES

COURSE:

OPERATING THE FARM BUSINESS(V) 8014

TASK/COMPETENCY:

5.22 Develop wildlife management plan

PERFORMANCE OBJECTIVE

P5.22 Given reference materials and a case study, develop a wildlife management plan. The plan must include: a) a determination of balance of animals to food supply; b) evaluation of physical condition of wildlife; c) analysis of wildlife habitat; and d) recommendations for stocking or thinning procedures.

CRITERION-REFERENCED MEASURE

C5.22 Written plan; specified criteria included

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Inventory available feed for wildlife.
2. Determine the balance of animals to food supply.
3. Determine physical condition of wildlife.
4. Evaluate wildlife habitat.
5. Recommend stocking or thinning procedures.

CONCEPT/DUTY AREA:

5. MANAGING NATURAL RESOURCES

COURSE:

AGRICULTURAL PRODUCTION TECHNOLOGY (III) 8010

TASK/COMPETENCY:

5.23 Identify tree species native to the region by their common names

PERFORMANCE OBJECTIVE

P5.23 Given appropriate reference material and samples of local tree species, identify by common name the tree species. Eighty percent of the samples must be identified and spelled correctly.

CRITERION-REFERENCED MEASURE

C5.23 Tree species identified and spelled correctly; 80% accuracy

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Conduct field trips to locate and identify 20 of the most common tree species in the region.
2. Locate reference material containing information on tree species native to a region.
3. Compare reference material description to observed characteristics of the tree.
4. Prepare a model of a tree, and label parts.
5. Determine probable sites to find a particular tree species.
6. Spell the common names of the tree species.
7. Prepare an arboretum containing native tree species.
8. Obtain copies of local area maps, and use colored pencils to shade in areas of heavy concentrations of various tree species.
9. Participate in FFA contests on tree identification.

CONCEPT/DUTY AREA:

5. MANAGING NATURAL RESOURCES

COURSE:

AGRICULTURAL PRODUCTION TECHNOLOGY (III) 8010

TASK/COMPETENCY:

5.24 Identify forest products

PERFORMANCE OBJECTIVE

P5.24 Given access to a wooded location, identify forest products that could be secured from the site. Eighty percent of the possible products must be identified.

CRITERION-REFERENCED MEASURE

C5.24 Eighty percent of the possible forest products in a specific location identified

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. List the industries that require wood.
2. Identify common product uses for a particular tree species.
3. Arrange field trips to a sawmill and wood-products distributor for students to discover traditional and new uses of wood.
4. Divide class into small groups. Assign each group a different tree species, and have them produce illustrations (posters, slides, bulletin boards) of the products made from the tree.

CONCEPT/DUTY AREA:	**COURSE:**
5. MANAGING NATURAL RESOURCES	OPERATING THE FARM BUSINESS (V) 8014

TASK/COMPETENCY:

5.25 Develop plan to produce Christmas trees

PERFORMANCE OBJECTIVE

P5.25 Given a case study or access to a suitable site, develop plan to produce Christmas trees. The written plan must contain information on each of the nine production questions.

CRITERION-REFERENCED MEASURE

C5.25 Written plan containing information on each of the following questions:

1. Why is this site suitable?
2. What varieties should be planted?
3. How many trees should be planted?
4. How should the trees be planted?
5. How should the trees be maintained?
6. What problems may be encountered?
7. How will the trees be harvested?
8. How will the trees be marketed?
9. What records must be kept?

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Determine characteristics of a desirable site.
2. Name suitable varieties for Christmas tree production.
3. Locate source for purchasing adequate, healthy tree stock.
4. Explain planting methods (hand or machine).
5. Devise pruning and shaping schedules.
6. Project fertilizer, insecticide, or pesticide needs.
7. Grade trees.
8. Arrange for on- or off-site marketing of trees.
9. Prepare recordkeeping file to determine profit or loss.
10. Arrange for a Christmas tree plot as an FFA management activity.

CONCEPT/DUTY AREA:

5. MANAGING NATURAL RESOURCES

COURSE:

OPERATING THE FARM BUSINESS (V) 8014

TASK/COMPETENCY:

5.26 Calculate volume of pulpwood

PERFORMANCE OBJECTIVE

P5.26 Given a written set of dimensions, the actual pulp sticks, or a standing tree, calculate the volume of pulpwood. The calculations must be within 5% of the instructor's calculations.

CRITERION-REFERENCED MEASURE

C5.26 Pulpwood volume calculations within 5% of instructor's calculations

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Define terminology associated with calculation of pulpwood volume, such as cord, cubic feet, or cubic meter.
2. Use tape to determine width, height, and bolt length of stacked rick in feet.
3. Use Biltmore stick to determine number of pulp sticks in standing timber.
4. Convert measurements to measure desired (cord, cubic feet, cubic meter).
5. Describe requirements for participation in the federation FFA Forestry Contest.

CONCEPT/DUTY AREA:

5. MANAGING NATURAL RESOURCES

COURSE:

OPERATING THE FARM BUSINESS (V) 8014

TASK/COMPETENCY:

5.27 Estimate the volume of standing timber on a given tract

PERFORMANCE OBJECTIVE

P5.27 Given access to a tract of land, estimate the volume of standing timber for that particular tract. Estimate must be within 5% of the instructor's calculations.

CRITERION-REFERENCED MEASURE

C5.27 Standing timber estimation within 5% of instructor's calculations

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Define terminology associated with measuring standing timber.
2. List tools used for measuring standing timber.
3. Describe proper use of each tool.
4. Use the Biltmore stick, diameter tape, and tree caliper to measure breast high (dbh).
5. Explain the concept of random and stratified sampling as applied to estimations.

CONCEPT/DUTY AREA:

5. MANAGING NATURAL RESOURCES

COURSE:

OPERATING THE FARM BUSINESS (V) 8014

TASK/COMPETENCY:

5.28 Develop tree fertilization plan

PERFORMANCE OBJECTIVE

P5.28 Given a case study or access to a suitable location, develop a tree fertilization plan. The plan must meet all criteria specified in instructor-provided guidelines.

CRITERION-REFERENCED MEASURE

C5.28 Tree fertilization plan; instructor-provided guidelines

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Determine need for additional fertilizer by reviewing common methods of diagnosis.
2. Identify level of nutrients needed for young and older stands.
3. Describe effects of nitrogen, phosphorus, and potassium, and other macro- and micro-nutrients upon tree growth.
4. Identify methods used to time applications to coincide with plant growth cycles.
5. Determine amount and method of application.
6. Explain the cost/benefit factors associated with fertilization.
7. Grow container plants, and apply different levels of fertilizer; compare plant growth to fertilizer levels.
8. Invite a commercial forester to speak on tree fertilization procedures.

CONCEPT/DUTY AREA:

5. MANAGING NATURAL RESOURCES

COURSE:

OPERATING THE FARM BUSINESS (V) 8014

TASK/COMPETENCY:

5.29 Identify regeneration techniques necessary for the continuous growth of trees

PERFORMANCE OBJECTIVE

P5.29 Given guidelines on managing the forest, identify regeneration techniques that are necessary for the continuous growth of trees by listing and describing five techniques on an instructor-prepared worksheet.

CRITERION-REFERENCED MEASURE

C5.29 Instructor-prepared worksheet; five techniques listed and described

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. List forest regeneration techniques.
2. Identify appropriate use of each regeneration technique.
3. Describe procedures to be followed in implementing each regeneration technique.
4. Define terminology associated with regeneration techniques.
5. Conduct regeneration research by practicing techniques on sites in the local area.

CONCEPT/DUTY AREA:

5. MANAGING NATURAL RESOURCES

COURSE:

OPERATING THE FARM BUSINESS (V) 8014

TASK/COMPETENCY:

5.30 Design plans to establish forest roads

PERFORMANCE OBJECTIVE

P5.30 Given resources on managing the forest, design plans to establish forest roads for hypothetical or actual situations developed by the instructor. The written plan must contain: a) the location of the road; b) a list of equipment to be used; and c) a description of erosion control measures to be implemented.

CRITERION-REFERENCED MEASURE

C5.30 Written road plan; specified components included

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Determine the need for and purpose of the road system.
2. Determine the general location of the road.
3. Identify the actual and visual impacts upon the environment from landforms, vegetation, and structures associated with the roadwork.
4. Describe a possible layout for the roadbed by walking the length of the site.
5. Conduct a preliminary location survey.
6. Explain method used to clear mechantable trees in the right-of-way.
7. Explain importance of providing drainage and slope stabilization.
8. Identify procedure to prepare skid roads and skid trails needed to remove timber from stump site.
9. Locate landings of appropriate size to accommodate equipment.
10. Explain methods to control erosion of soil surrounding logging and skid roads.

CONCEPT/DUTY AREA:

5. MANAGING NATURAL RESOURCES

COURSE:

OPERATING THE FARM BUSINESS (V) 8014

TASK/COMPETENCY:

5.31 Develop a plan for the management of a forest

PERFORMANCE OBJECTIVE

P5.31 Given resources on managing the forest, develop a plan for the management of a forest. The written plan must contain the following information: a) type of dominant stand; b) owner's wishes and goals; c) description of current stand and projected growth patterns; d) recommendations for cultural changes; and e) plan for implementing.

CRITERION-REFERENCED MEASURE

C5.31 Written plan; all components included

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Identify major forest type appropriate to the region.
2. Determine objectives of individual or firm owning the forest.
3. Analyze current forest stand (composition, age, growth rate, and size).
4. Explain the need for intermediate and harvest cuts.
5. Identify cultural practices to promote optimal growth.
6. Determine how to secure cost-efficient machinery, equipment, and tools.
7. Explain procedure to prepare land for reforestation.

CONCEPT/DUTY AREA:

5. MANAGING NATURAL RESOURCES

COURSE:

OPERATING THE FARM BUSINESS (V) 8014

TASK/COMPETENCY:

5.32 Plan a timber stand improvement project of planting, thinning, and pruning a stand of uneven-aged or even-aged forests

PERFORMANCE OBJECTIVE

P5.32 Given resources on forest management, plan a timber stand improvement (TSI) project of planting, thinning, and pruning a stand of uneven-aged or even-aged forests. The plan must be written and rated acceptable according to instructor-provided checklist.

CRITERION-REFERENCED MEASURE

C5.32 Instructor-provided checklist; all items rated acceptable

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Define timber stand improvement (TSI) and related terminology.
2. Explain method used to prepare forest site for planting.
3. Identify procedures used to seed or plant site.
4. Identify procedures used to thin and prune site.
5. Describe culling, fire, forest watershed, and forest recreation, and relate to TSI.
6. Invite a commercial forester to discuss TSI.

CONCEPT/DUTY AREA:

5. MANAGING NATURAL RESOURCES

COURSE:

OPERATING THE FARM BUSINESS (V) 8014

TASK/COMPETENCY:

5.33 Manage a forest harvesting plot

PERFORMANCE OBJECTIVE

P5.33 Given a simulated supervisory role, manage a forest harvesting plot in a role-play situation for a specific period of time during a simulated harvesting operation. Successful performance will be an acceptable rating on an instructor-prepared checklist.

CRITERION-REFERENCED MEASURE

C5.33 Instructor-prepared checklist; all items rated acceptable

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Select trees for harvest.
2. Demonstrate ability to use roads and clearings to good advantage.
3. Supervise felling of trees.
4. Supervise limbing and bucking of trees.
5. Supervise handling and skidding of trees.
6. Supervise loading of logs and other material.
7. Supervise hauling of logs and other material.
8. Enforce safety regulations during harvesting operation.
9. Maintain the necessary records of the plot and the harvesting operation.

CONCEPT/DUTY AREA:	**COURSE:**
5. MANAGING NATURAL RESOURCES	OPERATING THE FARM BUSINESS (V) 8014

TASK/COMPETENCY:

5.34 Identify fire control measures

PERFORMANCE OBJECTIVE

P5.34 Given a demonstration by the instructor on methods and procedures for controlling forest fires, identify fire control measures on an instructor-prepared test with 80% accuracy.

CRITERION-REFERENCED MEASURE

C5.34 Instructor-prepared test; 80% accuracy

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Recite the 10 standard fire-fighting orders, and explain each order.
2. Diagram the chain of command for a fire-fighting crew.
3. Identify standards for passing a required physical fitness test.
4. Explain procedures to operate hand or power tools and equipment used by crew members.
5. List potentially life-threatening/property-damaging situations.
6. Explain the fire triangle and how to control a fire by removing one or more legs of a triangle.
7. Explain all safety procedures.
8. Invite a local forest service agent to speak to class and to organize a Keep Virginia Green (KVG) fire-fighting crew.

CONCEPT/DUTY AREA:

5. MANAGING NATURAL RESOURCES

COURSE:

OPERATING THE FARM BUSINESS (V) 8014

TASK/COMPETENCY:

5.35 Prepare fire prevention publicity materials

PERFORMANCE OBJECTIVE

P5.35 Given resources and the necessary materials and supplies, prepare fire prevention publicity materials. The materials must be appropriate for a specified audience, be presented effectively, and incorporate local data and information.

CRITERION-REFERENCED MEASURE

C5.35 Publicity materials meeting all specified criteria

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Describe the Virginia forest fire and burning laws.
2. Illustrate methods of fire prevention.
3. Describe Forest Service symbols used in fire prevention publicity.
4. Select an appropriate format for a publicity release.
5. Explain restrictions involved in using the "Smokey the Bear" emblem.
6. Prepare materials for events such as Fire Prevention Week.
7. Organize a fire prevention poster or essay contest for elementary school children.

EQUIPMENT AND MATERIALS

Task 5.1

Instructor-prepared guidelines

Task 5.2

Instructor-prepared worksheet
Maps of local geographic region

Task 5.3

Instructor-prepared worksheet

Task 5.4

Instructor-prepared guidelines

Task 5.5

Instructor-prepared checklist

Task 5.6

Seeds
Means of polluting air samples
Growing medium
Instructor-prepared worksheet

Task 5.7

Samples of vegetation materials used for conservation

Task 5.8

Soil Conservation Service recommendations

Task 5.9

Growing medium
Seeds
Samples of polluted water
Instructor-prepared worksheet

Task 5.10

Instructor-prepared case situations

Task 5.11

Instructor-provided guidelines

Task 5.12

None identified

Task 5.13

Instructor-prepared test

Task 5.14

Calculator

Task 5.15

Soil preparation equipment
Plants, trees, or seeds for habitat or food
Instructor-prepared checklist

Task 5.16

Binoculars
Pictures/slides/illustrations of wildlife species

Task 5.17

Soil Conservation Service recommendations
Instructor-prepared case study (optional)

Task 5.18

Case study records
Seine
Wire traps
Instructor-prepared checklist

Task 5.19

Guidelines of the Virginia Department of Game and Inland Fisheries
Pond drainage equipment or seines
Hatchery fish

Task 5.20

None identified

Task 5.21

Incubators
Instructor-prepared standards
Brooders
Pens

Task 5.22

Case study materials

Task 5.23

Local area maps
Samples of local tree species
Colored pencils

Task 5.24

None identified

Task 5.25

FFA Christmas tree plot:
Chain saw
Hand shears
Mattock
Twine
Pruners
Pruning saw
Shovel

Task 5.26

Steel tape measure
Biltmore stick
Pulpwood

Task 5.27

Biltmore stick (with Merritt Hypsometer scale)
Diameter tape
Tree caliper

Task 5.28

Instructor-prepared materials:
Case study
Guidelines for written plan

Task 5.29

Instructor-prepared worksheet

Task 5.30

Case studies
Abney hand level or Suunto clinometer
Measuring tape
Aerial photos or maps
Grade and slope stakes (for permanent roads)
Flagging material
Axe or brush hook
Hand compass

Task 5.31

None identified

Task 5.32

Pruning saws
Chain saw
Instructor-provided checklist

Task 5.33

Measuring tools (movement borer, diameter tape, Biltmore stick)
Harvesting equipment (chain saw or power equipment)
Instructor-prepared checklist

Task 5.34

Axe
Brushhook
Crosscut saw
Hard hat
Rake
Steel toe boots
Instructor-prepared test
Back pack pump
Chain saw
Fire brook
Pulaski
Shovel
Torch (fusee and drip)

Task 5.35

Tape recorder
Poster materials/art supplies

RESOURCES

Task 5.1

Filmstrip series produced by Vocational Education Productions:

Air and the Agricultural Environment.
Ecology and the Agricultural Environment.
People and the Agricultural Environment.
Soil and the Agricultural Environment.
Water and the Agricultural Environment.

Task 5.4

Slidefilm: Agriculture and the Ecosystem. Vocational Agriculture Service.

Task 5.5

Film: Little Big Land. Virginia Department of Game and Inland Fisheries.
Slidefilm: Agriculture and the Environment. Vocational Agriculture Service.

The filmstrip series listed for task 5.1 is also recommended for use with task 5.5.

Task 5.6

Filmstrip: Air and the Agricultural Environment. Vocational Agriculture Service.
Slidefilm: Air Pollution Damage to Vegetation. Vocational Agriculture Service.

Task 5.7

Slidefilm: Vegetation Controls as an Aid to Environmental Quality. Vocational Agriculture Service.

Task 5.8

Slidefilm: Erosion, Sedimentation, and Environmental Quality. Vocational Agriculture Service.
Filmstrip: Soil and the Agricultural Environment. Vocational Education Productions.

Task 5.9

Filmstrips: Ecology and Agriculture Kit. Vocational Education Productions.
Water and the Agricultural Environment. Vocational Education Productions.

Task 5.12

Film: Dammed Forever. Virginia Department of Game and Inland Fisheries.

Filmstrips: Ecology and Agriculture Kit. Vocational Education Productions.
People and The Agricultural Environment. Vocational Education Productions.

Task 5.15

Films: A Place to Live. Virginia Department of Game and Inland Fisheries.
The Farm. Virginia Department of Game and Inland Fisheries.

Tasks 5.17-5.18

Filmstrips: Fish Farming in the 80's. Vocational Education Productions.
Modern Fish Farms. Vocational Education Productions.

Task 5.20

Film: World in a Marsh. Virginia Department of Game and Inland Fisheries.

Task 5.21

Filmstrips: "An Introduction to Game Birds"; "Brooding." Game Bird Management Kit Series. Vocational Education Productions.

Task 5.22

Filmstrip: Managing Wildlife: Is It For You? Vocational Education Productions.

Task 5.23

Slides: Tree Identification. Ohio Agricultural Education Curriculum Materials Service.

Task 5.27

Slides: Timber Cruising. Ohio Agricultural Education Curriculum Materials Service.

Software: Timber Cruising. (Apple, IBM). AAVIM.

Task 5.34

Filmstrips produced by Boise Interagency Fire Center (contact local forester for availability):

1. Introduction to Fire Behavior
2. Atmosphere Stability and Instability
3. Man Against Fire
4. Crew Boss
5. Fire Weather
6. Water on The Fire
7. Handtools for Wildfire
8. Standards for Survival
9. Your Way Out

REFERENCES

Task 5.1

Alternate Goals: 1985 Resources Planning Act Program. USDA. Forest Service.
Conservation Farming. Hughes.
Understanding the Game of the Environment. USDA. Forest Service.

Task 5.2

Conservation Farming. Hughes.
Water Supply Sources for the Farmstead and Rural Home. USDA. Science and Education Administration.

Task 5.3

None identified

Task 5.4

Description of the Ecoregions of the United States. USDA. Forest Service.

Task 5.5

Agriculture and the Environment. USDA. Office of Environmental Quality.
Conservation Farming. Hughes.

Task 5.6

The Air Pollution Inspector. Ohio Agricultural Education Curriculum Materials Service.

Task 5.7

Conservation Farming. Hughes.
Plant Materials for Conservation. USDA. Soil Conservation Service.

Task 5.8

Conservation Farming. Hughes.
Determining Probable Soil Losses in Conservation Planning. Vocational Agriculture Service.
National Forest Landscape Management: Range. USDA. Forest Service.
Using Conservation Tillage Systems. Vocational Agriculture Service.

Task 5.9

Treating Farmstead and Rural Home Water Systems. USDA. Agricultural Research Service.

Task 5.10

None identified

Task 5.11

Services Available Through The U.S. Department of Agriculture. USDA. Office of The Secretary.
Virginia's Endangered Species. Virginia Department of Game and Inland Fisheries.

Task 5.12

A Computerized System for Estimating and Displaying Shortrun Costs of Soil Conservation Practices. USDA. Economic Research Service.
Conservation Farming. Hughes.
Using Conservation Tillage Systems. Vocational Agriculture Service.

Task 5.13

None identified

Task 5.14

Conservation Farming. Hughes.
Water Supply Sources for the Farmstead and Rural Home. USDA. Science and Education Administration.

Task 5.15

Wildlife Habitat Improvement Handbook. USDA. Forest Service.
Wildlife Conservation in Virginia. Available from Virginia Department of Game and Inland Fisheries.
Virginia's Wildlife. Virginia Department of Game and Inland Fisheries.

Task 5.16

The Hunter's Field Guide to the Game Birds and Animals of North America. Elman.
McClane's Field Guide to Freshwater Fishes of North America. McClane.
Virginia's Wildlife. Virginia Department of Game and Inland Fisheries.
Wildlife Conservation in Virginia. Available from Virginia Department of Game and Inland Fisheries.

Tasks 5.17-5.18

Building a Pond. USDA. Soil Conservation Service.
Outdoors, USA, The Yearbook of Agriculture. USDA.
Wildlife Conservation in Virginia. Available from Virginia Department of Game and Inland Fisheries.

Tasks 5.19-5.20

Wildlife Conservation in Virginia. Available from Virginia Department of Game and Inland Fisheries.

Task 5.21

Stocking with Quail and Pheasant. Vocational Agriculture Service.

Task 5.22

A Forester's Guide to Observing Wildlife Use of Forest Habitat in the South. USDA. Forest Service.
Wildlife Management. Giles.
Wildlife Management Techniques Manual, 4th ed. The Wildlife Society.

Task 5.23

A Forest Atlas of the South. USDA. Forest Service.
Forestry in Agricultural Education in Virginia. Virginia Department of Education.
Identifying Hardwoods Growing on Pine Sites. USDA. Forest Service.
Important Forest Trees of the United States. USDA. Forest Service.
Teaching Tree Identification. Ohio Agricultural Education Curriculum Materials Service.
Tree Identification. Ohio Agricultural Education Curriculum Materials Service.
The Woodland Bark of Hardwoods Growing on Southern Pine Sites--A Pictorial Atlas. USDA. Forest Service.

Task 5.24

Forest for Our Needs: 1979 Research Accomplishments. USDA. Forest Service.
Forestry in Agricultural Education in Virginia. Virginia Department of Education.

Task 5.25

Forestry in Agricultural Education in Virginia. Virginia Department of Education.
Growing Christmas Trees in the South. USDA. Forest Service.
Growing and Selling Christmas Trees. Vocational Agriculture Service.

Tasks 5.26-5.27

Forestry in Agricultural Education in Virginia. Virginia Department of Education.
National Forest Log Scaling Handbook. USDA. Forest Service.

Task 5.28

Forestry in Agricultural Education in Virginia. Virginia Department of Education.
Principles of Silviculture, 2nd ed. Daniel and others.
Properties and Management of Forest Soils. Pritchett.

Task 5.29

Equipment for Reforestation and Timber Stand Improvement. USDA. Forest Service.
Forestry in Agricultural Education in Virginia. Virginia Department of Education.
National Forest Landscape Management: Timber. USDA. Forest Service.
Principles of Silviculture. Daniel and others.
Seed and Planting Stock Dealers. USDA. Forest Service.

Task 5.30

Forestry in Agricultural Education in Virginia. Virginia Department of Education.
Handbook for Eastern Timber Harvesting. USDA. Forest Service.
National Forest Landscape Management: Roads. USDA. Forest Service.
National Forest Landscape Management: Timber. USDA. Forest Service.
Permanent Logging Roads for Better Woodlot Management. USDA. Forest Service.

Task 5.31

Equipment for Reforestation and Timber Stand Improvement. USDA. Forest Service.
Forest Management Chemicals: A Guide to Use When Considering Pesticides for Forest Management. USDA. Forest Service.
Forestry in Agricultural Education in Virginia. Virginia Department of Education.
National Forest Landscapes Management: Timber. USDA. Forest Service.
Planting and Care of Farm Forests. Vocational Agriculture Service.
Silvicultural Systems for The Major Forest Types of The United States. USDA. Forest Service.
Wilderness Manager's Handbook. USDA. Forest Service.

Task 5.32

Equipment for Reforestation and Timber Stand Improvement. USDA. Forest Service.
Forestry in Agricultural Education in Virginia. Virginia Department of Education.
Managing Young Stands for Firewood. USDA. Forest Service.
National Forest Landscape Management: Timber. USDA. Forest Service.
Principles of Silviculture, 2nd ed. Daniel and others.
Why TSI? Timbers Stand Improvement Increase Profits. USDA. Forest Service.

Task 5.33

Equipment for Reforestation and Timber Stand Improvement. USDA. Forest Service.
Forest Management Practices to Prevent Insect and Disease Damage to Southern Pine. USDA. Forest Service
Forestry in Agricultural Education in Virginia. Virginia Department of Education.
National Forest Landscape Management: Timber. USDA. Forest Service.
National Forest Log Scaling Scaling Handbook. USDA. Forest Service.
Our Natural Resources. Kircher and Wallace.
Timber and Harvesting Occupations. V-TECS.
Uneven-Aged Silviculture and Management in The United States. USDA. Forest Service.

Task 5.34

Fire-Weather Observer's Handbook. USDA. Forest Service.
Forestry in Agricultural Education in Virginia. Virginia Department of Education.
10 Standard Fire Fighting Orders. USDA. Forest Service.

Task 5.35

Activities for Learning About Conservation of Forest Resources: A Guide for Leaders of Youth Groups. USDA. Forest Service.
Forestry in Agricultural Education in Virginia. Virginia Department of Education.
The Natural Role of Fires. USDA. Forest Service.
You and Forest Fires. USDA. Forest Service.

CONCEPT/DUTY AREA

6. MAINTAINING THE HOME LAWN

TASKS/COMPETENCIES

6.1 Spread topsoil

6.2 Prepare compost

6.3 Sterilize soil

6.4 Add mulch to new seedlings

6.5 Inspect plants for insects

6.6 Remove weeds and grasses from flower bed

6.7 Plant annual flowers

6.8 Plant flower bulbs

6.9 Wrap trees or shrubs to protect from weather

6.10 Select chemicals for a specific use

6.11 Apply chemical treatment to plants

6.12 Apply weed-killing compounds to lawns

6.13 Prune trees

6.14 Develop fertilization schedules

CONCEPT/DUTY AREA:

6. MAINTAINING THE HOME LAWN

COURSE:

AGRICULTURAL PRODUCTION
TECHNOLOGY (III) 8010

TASK/COMPETENCY:

6.1 Spread topsoil

PERFORMANCE OBJECTIVE

P6.1 Given access to an area requiring topsoil and the necessary tools and equipment, spread topsoil on the designated area to a depth of 10-12 inches.

CRITERION-REFERENCED MEASURE

C6.1 Topsoil spread on designated area; soil level with a uniform depth of 10-12 inches throughout

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Determine area needing topsoil and depth to be filled.
2. Calculate amount of topsoil required for a specific site.
3. Place fill stakes at regular intervals to indicate proper depth.
4. Calculate volume of wheelbarrow; determine number of trips and length of time to complete hauling.
5. Choose route for hauling topsoil to fill site.
6. Load wheelbarrow, transport, and dump topsoil.

CONCEPT/DUTY AREA:

6. MAINTAINING THE HOME LAWN

COURSE:

AGRICULTURAL PRODUCTION
TECHNOLOGY (III) 8010

TASK/COMPETENCY:

6.2 Prepare compost

PERFORMANCE OBJECTIVE

P6.2 Given access to a compost bin, tools, and organic materials, prepare compost. All items on an instructor-prepared checklist must be rated acceptable.

CRITERION-REFERENCED MEASURE

C6.2 Instructor-prepared checklist; all items rated acceptable

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Explain the uses of compost.
2. List benefits of incorporating compost into soil.
3. Identify matter that should and should not be added to compost piles.
4. Outline the procedures for beginning a compost pile.
5. Arrange with SOE supervisors for students to prepare and maintain a compost pile.
6. Demonstrate how to work compost into the soil.

CONCEPT/DUTY AREA:

6. MAINTAINING THE HOME LAWN

COURSE:

AGRICULTURAL PRODUCTION
TECHNOLOGY (III) 8010

TASK/COMPETENCY:

6.3 Sterilize soil

PERFORMANCE OBJECTIVE

P6.3 Given access to a soil area and the necessary tools and equipment, sterilize the soil with fumigants or chemicals in either granular or powdered formulations, according to manufacturer's specifications. All safety procedures must be observed.

CRITERION-REFERENCED MEASURE

C6.3 Soil sterilized in accordance with manufacturer's specifications; all safety procedures observed

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Prepare soil area for sterilization as recommended by manufacturer of product to be used.
2. Identify recommended amount of fumigant or chemical.
3. Place warning signs in noticeable locations.
4. Describe safety procedures given by manufacturer.
5. Demonstrate procedures for covering soil; discuss the different methods applicable for various fumigants.
6. Explain time restrictions specified by manufacturer before using soil.
7. Provide students with samples of untreated soil containing either fungi, nematodes, or weed seeds and with samples of sterilized soil. Plant seeds in both types of soil and record results.

CONCEPT/DUTY AREA:

6. MAINTAINING THE HOME LAWN

COURSE:

AGRICULTURAL PRODUCTION
TECHNOLOGY (III) 8010

TASK/COMPETENCY:

6.4 Add mulch to new seedlings

PERFORMANCE OBJECTIVE

P6.4 Given access to a bed of seedlings, mulching materials, and necessary tools, add mulch to new seedlings. Mulch must be added around plants to a depth of 2 to 3 inches and the entire boundaries of the bed must be covered, or spread a distance equal to the diameter of plant top growth.

CRITERION-REFERENCED MEASURE

C6.4 Mulch added to a depth of 2 to 3 inches and spread to cover entire bed, or a distance equal to diameter of plant top growth

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Prepare soil for mulch, if necessary.
2. Spread mulch evenly over bed.
3. Add enough mulch to allow for settling.
4. Smooth top of mulch, if necessary.

CONCEPT/DUTY AREA:

6. MAINTAINING THE HOME LAWN

COURSE:

AGRICULTURAL PRODUCTION
TECHNOLOGY (III) 8010

TASK/COMPETENCY:

6.5 Inspect plants for insects

PERFORMANCE OBJECTIVE

P6.5 Given access to plant material in indoor and outdoor settings, inspect the plants for insects. After the inspection, the following information must be reported to the instructor: a) type of insect damage found; 2) general condition of the plants; 3) identification of any insects found, or if none are found, identification of possible insect species causing the damage. Information reported must agree with results of instructor's inspection.

CRITERION-REFERENCED MEASURE

C6.5 Results of plant inspection in concurrence with instructor's findings

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Determine overall appearance of plant; look for wilting, discoloring, defoliation, webbing, or other symptoms of insect presence.

2. Describe surfaces of the plant and the condition of the soil surrounding the plant.

3. Identify the insect damage caused by a chewing or sucking insect.

4. Identify the particular insect causing damage to the plant.

5. Identify beneficial insects.

CONCEPT/DUTY AREA:

6. MAINTAINING THE HOME LAWN

COURSE:

AGRICULTURAL PRODUCTION
TECHNOLOGY (III) 8010

TASK/COMPETENCY:

6.6 Remove weeds and grasses from flower bed

PERFORMANCE OBJECTIVE

P6.6 Given a hoe or hand weeder, remove weeds and grasses from flower beds without damaging existing flowers. All weeds and grasses must be removed without damage to the flowers as verified by the instructor.

CRITERION-REFERENCED MEASURE

C6.6 Weeds and grasses removed without damaging flowers; instructor's verification

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Determine if weeds and grasses can be removed easily. If not, water the flower beds thoroughly.
2. Use hoe or hand weeder to uproot weeds and grasses.
3. Rake weeds and grasses to edge of bed.
4. Dispose of weeds and grasses.
5. Add new soil or mulch, and rake surface of flower beds until smooth.

CONCEPT/DUTY AREA:

6. MAINTAINING THE HOME LAWN

COURSE:

AGRICULTURAL PRODUCTION
TECHNOLOGY (III) 8010

TASK/COMPETENCY:

6.7 Plant annual flowers

PERFORMANCE OBJECTIVE

P6.7 Given containers of annual plants, access to a seedbed, water, and planting tools, plant annual flowers. All items on an instructor-prepared checklist must be rated acceptable.

CRITERION-REFERENCED MEASURE

C6.7 Instructor-prepared checklist; all items rated acceptable

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Check soil for proper moisture and composition.
2. Dig hole to following rule of thumb: twice width of root ball and slightly deeper than root ball.
3. Remove plant from container just prior to planting by cutting two sides of the container.
4. Pull root ends loose from ball on compacted plants.
5. Set plant into hole and fill in with soil under and around root ball. Top of root ball should be flush with top of existing seedbed.
6. Water-in plants.
7. Provide shade from sun, if needed.
8. Select a suitable site, and for a class or FFA project, plant annual flowers to enhance school or community grounds.

CONCEPT/DUTY AREA:

6. MAINTAINING THE HOME LAWN

COURSE:

AGRICULTURAL PRODUCTION
TECHNOLOGY (III) 8010

TASK/COMPETENCY:

6.8 Plant flower bulbs

PERFORMANCE OBJECTIVE

P6.8 Given flower bulbs, access to a seedbed, water, and planting tools, plant bulbs. Bulbs must be planted the proper depth, must be spaced apart the correct distance for the variety, the pointed end must be positioned upward, and completely covered with topsoil.

CRITERION-REFERENCED MEASURE

C6.8 Bulbs planted the proper depth, spaced the appropriate distance apart, set in the ground with the pointed end upward, and completely covered with topsoil

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. List names and characteristics of various flowers grown from bulbs.
2. Identify the type of plant food recommended for most bulbs.
3. Remove bulb from package or storage bed. If from bed, take a generous amount of soil with each bulb.
4. Dig hole to following rule of thumb: 2 ½ to 3 times diameter of bulb for depth and twice the diameter for width.
5. Place bulb in hole with pointed end in upward position.
6. Fill in hole with soil.
7. Provide adequate moisture for growth.

CONCEPT/DUTY AREA:

6. MAINTAINING THE HOME LAWN

COURSE:

AGRICULTURAL PRODUCTION TECHNOLOGY (III) 8010

TASK/COMPETENCY:

6.9 Wrap trees or shrubs to protect from weather

PERFORMANCE OBJECTIVE

P6.9 Given trees and shrubs that require wrapping and the necessary wrapping materials, wrap the trees or shrubs to protect from the weather. Vulnerable areas of each plant must be wrapped completely, and the covering secured to withstand winter weather.

CRITERION-REFERENCED MEASURE

C6.9 Trees/shrubs covered appropriately and wrapping secured

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Determine areas of trees and shrubs vulnerable to winter weather.
2. Select a suitable wrapping material for the tree or shrub.
3. Read manufacture's recommendations for applying the wrapping materials.
4. Determine if wrappings are secure.
5. Discuss with students the possibility of establishing a business that provides this service to local homeowners.

CONCEPT/DUTY AREA:

6. MAINTAINING THE HOME LAWN

COURSE:

AGRICULTURAL PRODUCTION
TECHNOLOGY (III) 8010

TASK/COMPETENCY:

6.10 Select chemicals for a specific use

PERFORMANCE OBJECTIVE

P6.10 Given a description of a landscaped area, select chemicals for a specific use. Selection must be made in a written description including the brand name of the chemical, quantity needed, cost, and names and addresses of suppliers.

CRITERION-REFERENCED MEASURE

C6.10 Chemical selected and information on brand name, quantity, cost, and suppliers presented

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Describe landscaped area.
2. Locate appropriate reference literature.
3. Determine specific need for chemicals.
4. Identify Cooperative Extension Service literature regarding common insects and diseases, recommended chemicals for control, and chemical application rates.
5. List chemical type and application rate for the specific use under consideration.
6. List chemicals to be purchased, including the brand name, item quantities, and supplier.
7. Compute costs of chemicals to be purchased.

CONCEPT/DUTY AREA:

6. MAINTAINING THE HOME LAWN

COURSE:

AGRICULTURAL PRODUCTION
TECHNOLOGY (III) 8010

TASK/COMPETENCY:

6.11 Apply chemical treatment to plants

PERFORMANCE OBJECTIVE

P6.11 Given access to chemical treatment charts and the required equipment, apply a chemical treatment to diseased or insect-infested plants to correct or arrest the problem. All precautions listed on the chemical container must be observed, as well as general safety rules of application. All items on an instructor-prepared checklist must be rated acceptable.

CRITERION-REFERENCED MEASURE

C6.11 Instructor-prepared checklist; all items rated acceptable

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Determine proper chemical for usage.
2. Explain container label with regard to application directions and precautions.
3. Identify existing weather conditions, and determine if spray can be applied.
4. Prepare equipment and chemical mixture.
5. Demonstrate application procedures for spraying affected area of plants.
6. Dispose of chemical container and excess chemical.
7. Store chemical in safe location.
8. Clean spray equipment and store.
9. Wash exposed skin areas with soap and water.

CONCEPT/DUTY AREA:

6. MAINTAINING THE HOME LAWN

COURSE:

AGRICULTURAL PRODUCTION
TECHNOLOGY (III) 8010

TASK/COMPETENCY:

6.12 Apply weed-killing compounds to lawns

PERFORMANCE OBJECTIVE

P6.12 Given access to a lawn with weeds and weed-killing compounds, apply a weed-killing compound over all areas of the lawn. Chemical must be mixed and applied correctly; precautions stated on the chemical container must be observed; all safety procedures must be observed; and permanent plants and grasses must not be damaged by the chemical.

CRITERION-REFERENCED MEASURE

C6.12 Weed-killing compound applied in accordance with all stated criteria

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Describe all safety practices associated with handling, applying, and storing weed-killing compounds.
2. Identify the weed(s) present in the lawn.
3. Determine the correct herbicide to purchase for application.
4. Describe the proper method(s) of chemical application.
5. Determine the proper time to apply chemicals (time of year and time of day).
6. Explain the effects of chemical application upon weeds and desirable lawn grasses.
7. Store excess chemical properly.
8. Clean and store spray equipment.
9. Practice spray-application using water only.

CONCEPT/DUTY AREA:

6. MAINTAINING THE HOME LAWN

COURSE:

AGRICULTURAL PRODUCTION
TECHNOLOGY (III) 8010

TASK/COMPETENCY:

6.13 Prune trees

PERFORMANCE OBJECTIVE

P6.13 Given access to unpruned trees, pruning equipment, and safety equipment, prune trees. Cuts must be clean and flush to the leader with no splits, and an antiseptic compound must be applied to exposed surfaces 1½ inches in diameter or larger.

CRITERION-REFERENCED MEASURE

C6.13 Trees pruned according to all specified criteria; all safety procedures observed

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Sketch the natural shape of mature trees of various species.
2. Identify pruning equipment and tools, and discuss the safe operation of each.
3. Use flagging or tape to indicate where pruning cuts should be made.
4. Remove suckers and low branches.
5. Provide drawings or pictures of young trees; identify varieties, and explain in which species competing trees should be eliminated.
6. Relate symmetry and angle of branches to main trunks; determine best branches to serve as limbs.
7. Remove inward-growing and rubbing branches.
8. Demonstrate how to cut close to trunk or main branch, and explain why no stem should be left.
9. Demonstrate how to make a safety cut in large, heavy branches.
10. Describe the purpose of applying antiseptic compounds.
11. Invite a tree surgeon to speak to class.

CONCEPT/DUTY AREA:

6. MAINTAINING THE HOME LAWN

COURSE:

AGRICULTURAL PRODUCTION
TECHNOLOGY (III) 8010

TASK/COMPETENCY:

6.14 Develop fertilization schedules

PERFORMANCE OBJECTIVE

P6.14 Given a description of a landscaped area, results of a soil test, and an instructor-prepared schedule form, develop a fertilization schedule covering a one-year calendar period for applying fertilizer to shrubs, flowers, trees, and lawns. The schedule must include type and amount of fertilizer and application rates, methods, and dates. The completed schedule must match instructor's master schedule.

CRITERION-REFERENCED MEASURE

C6.14 Fertilization schedule in concurrence with instructor's master schedule

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Examine description of landscaped area.
2. Examine results of soil testing.
3. List each type of shrub, flower, tree, and lawn area on prepared schedule form.
4. Identify Cooperative Extension Service publications to determine analysis of various fertilizers and recommended rates of application.
5. List type of fertilizer, rate of application, method of application for applying fertilizer to shrubs, flowers, trees, and lawn areas.
6. Determine approximate dates for application.
7. Keep records of fertilizer applications.

EQUIPMENT AND MATERIALS

Task 6.1

- Fill stakes
- Shovel
- Topsoil
- Rake
- Wheelbarrow

Task 6.2

- Compost bin
- Organic materials
- Shovels
- Instructor-prepared checklist
- Decomposition chemical
- Rotary tiller
- Wheelbarrow

Task 6.3

- Untreated samples of soil
- Plastic
- Soil sterilizers (fumigant and chemical)
- Manufacturer's specifications

Task 6.4

- Rake
- Wheelbarrow
- Bark mulching material
- Shovel
- Seedlings

Task 6.5

- Hand lens

Task 6.6

- Hand weeder
- Hoe

Task 6.7

- Annual plants
- Shade cloth
- Watering can
- Scissors
- Shovel/hand trowel
- Instructor-prepared checklist

Task 6.8

- Bone meal
- Bulbs
- Bulb planter
- Shovel/hand trowel

Task 6.9

Burlap
String

Task 6.10

Case study situations

Task 6.11

Chemical application equipment
Personal safety equipment (respirator, rubber gloves)
Instructor-prepared checklist

Task 6.12

Herbicide application equipment
Personal safety equipment (respirator, rubber gloves)

Task 6.13

Pruning saw
Pole saw
Ladder
Tree wound paint
Power saw
Pruning knife
Safety equipment

Task 6.14

Instructor-prepared scheduling form and case studies

RESOURCES

Task 6.5

Slidefilm:	Identifying Common Insect Pests. Vocational Agriculture Service.

Task 6.6

Slidefilm:	Weed Identification. Vocational Agriculture Service.

Task 6.7

Slides:	Annuals. Ohio Agricultural Education Curriculum Materials Service.

Task 6.10

Slidefilm:	Selecting and Handling Pesticides. Vocational Agriculture Service.

Task 6.11

Slides:	Applying Pesticides. AAVIM. Calibrating and Applying Pesticides Safely. Vocational Agriculture Service.

Task 6.12

Slidefilms:	Lawn Weeds--Identification and Control. Vocational Agriculture Service. Weed Identification. Vocational Agriculture Service.

Task 6.13

Slidefilms available from Vocational Agriculture Service:

Pruning Deciduous Shrubs
Pruning Evergreens
Pruning Flowering Trees.

REFERENCES

Tasks 6.1-6.3

Gardening-Groundskeeping. V-TECS.
Introductory Horticulture. Reiley and Shry.

Task 6.4

Gardening-Groundskeeping. V-TECS.
Introductory Horticulture. Reiley and Shry.
The Nursery Worker. Ohio Agricultural Education Curriculum Materials Service.

Task 6.5

Controlling Tree and Shrub Insects. Vocational Agriculture Service.
Gardening-Groundskeeping. V-TECS.
Identifying Tree and Shrub Insects. Vocational Agriculture Service.
Introductory Horticulture. Reiley and Shry.
The Insect Identification Manual. Vocational Agriculture Service.

Task 6.6

Controlling Weeds. Vocational Agriculture Service.
Gardening-Groundskeeping. V-TECS.
Introductory Horticulture. Reiley and Shry.
Selected Weeds of the United States. USDA. Agricultural Research Service.

Task 6.7

Gardening-Groundskeeping, Performance Objective 53. V-TECS.
Growing Flowering Annuals. Vocational Agriculture Service.
Introductory Horticulture. Reiley and Shry.

Task 6.8

Introductory Horticulture. Reiley and Shry.
Nursery Production, Performance Objective 15. V-TECS.

Task 6.9

Gardening-Groundskeeping. V-TECS.
Introductory Horticulture. Reiley and Shry.

Task 6.10

Guidelines for The Control of Insect and Mite Pests of Foods, Fibers, Feeds, Ornamentals, Livestock, Households, Forests, and Forest Products. USDA. Science and Education Administration and Forest Service.
Introductory Horticulture. Reiley and Shry.

Task 6.11

Applying Pesticides. AAVIM.
Introductory Horticulture. Reiley and Shry.

Tasks 6.12-6.13

Gardening-Groundskeeping. V-TECS.
Introductory Horticulture. Reiley and Shry.
Pruning Shade Trees. Vocational Agriculture Service.

Task 6.14

Fertilizing and Watering Shade and Ornamental Trees. Vocational Agriculture Service.
Introductory Horticulture. Reiley and Shry.

CONCEPT/DUTY AREA

7. MANAGING FAMILY RESOURCES

TASKS/COMPETENCIES

7.1 Prepare a family budget

7.2 Conduct a safety survey

7.3 Plan for the wise use of time

7.4 Develop a plan for community improvement

7.5 Prepare a plan for homestead improvement

7.6 Record personal and family goals

CONCEPT/DUTY AREA:

7. MANAGING FAMILY RESOURCES

COURSE:

AGRICULTURAL PRODUCTION
TECHNOLOGY (III) 8010

TASK/COMPETENCY:

7.1 Prepare a family budget

PERFORMANCE OBJECTIVE

P7.1 Given an estimate of a family's income and a list of the family's needs, prepare a budget for the family for a period of one month. Budget must include all income and expenditures and must be balanced.

CRITERION-REFERENCED MEASURE

C7.1 Budget balanced and completed accurately

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Determine possible income.
2. Determine family needs.
3. Discuss conservation and cost-cutting measures.
4. Define incidental expenses, and list examples.

CONCEPT/DUTY AREA:

7. MANAGING FAMILY RESOURCES

COURSE:

AGRICULTURAL PRODUCTION
TECHNOLOGY (III) 8010

TASK/COMPETENCY:

7.2 Conduct a safety survey

PERFORMANCE OBJECTIVE

P7.2 Given a safety survey form, conduct a survey of the home. The survey must be completed accurately and in accordance with instructor's guidelines.

CRITERION-REFERENCED MEASURE

C7.2 Survey form completed accurately and in accordance with instructor-provided guidelines

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Review and discuss contents of survey form.
2. Discuss procedures that can be used to perform a safety survey.
3. Describe the types of hazards that might be found.
4. Discuss hazardous conditions in the community such as a dangerous intersection.
5. Develop a plan to correct hazardous conditions.

CONCEPT/DUTY AREA:

7. MANAGING FAMILY RESOURCES

COURSE:

AGRICULTURAL PRODUCTION
TECHNOLOGY (III) 8010

TASK/COMPETENCY:

7.3 Plan for the wise use of time

PERFORMANCE OBJECTIVE

P7.3 Given the work schedule of a family, plan for the wise use of time by preparing a schedule that allows for the completion of the work and for leisure time. The plan must include a schedule of work, social, and leisure time and be in accordance with instructor-provided guidelines.

CRITERION-REFERENCED MEASURE

C7.3 Schedule includes allocation for work, rest, social, and leisure time for each family member in accordance with instructor-provided guidelines.

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Determine amount of time needed to accomplish work.
2. Determine time available for social and leisure activities.
3. Allow time for scheduled rest.

CONCEPT/DUTY AREA:

7. MANAGING FAMILY RESOURCES

COURSE:

AGRICULTURAL PRODUCTION MANAGEMENT (IV) 8012

TASK/COMPETENCY:

7.4 Develop a plan for community improvement

PERFORMANCE OBJECTIVE

P7.4 Given information on the local community, develop a plan for community improvement. Plan must include a statement of the proposed activity and an outline of procedures to implement the plan.

CRITERION-REFERENCED MEASURE

C7.4 Community improvement plan developed; specified components included

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Discuss past improvement projects.
2. Describe ways to improve community at an FFA chapter meeting and in agriculture class.

CONCEPT/DUTY AREA:

7. MANAGING FAMILY RESOURCES

COURSE:

AGRICULTURAL PRODUCTION
MANAGEMENT (IV) 8012

TASK/COMPETENCY:

7.5 Prepare a plan for homestead improvement

PERFORMANCE OBJECTIVE

P7.5 Given instructor's guidelines, prepare a plan to improve the homestead site. Plan must include a sketch and a description of the improvements to be made and must be developed in accordance with instructor's guidelines.

CRITERION-REFERENCED MEASURE

C7.5 Plan developed for homestead improvement; instructor's guidelines

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Sketch present home site.
2. Prepare a list of needed improvements.
3. Sketch site with improvements noted.
4. Describe ways to improve homestead (renovation, landscaping, remodeling).

CONCEPT/DUTY AREA:

7. MANAGING FAMILY RESOURCES

COURSE:

AGRICULTURAL PRODUCTION
TECHNOLOGY (III) 8010

TASK/COMPETENCY:

7.6 Record personal and family goals

PERFORMANCE OBJECTIVE

P7.6 Given present family resources, family choices, and available alternatives, record personal and family goals. Goals must be recorded on an instructor-provided worksheet with all information requested supplied completely and accurately.

CRITERION-REFERENCED MEASURE

C7.6 Instructor-prepared worksheet; information recorded completely and accurately

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Appraise and analyze physical and human resources and capabilities.
2. Identify individual, family, and business goals.
3. Discuss realistic and unrealistic goals, and list examples of each.
4. Assess available alternatives.

EQUIPMENT AND MATERIALS

Task 7.1

Instructor-prepared budgeting situations

Task 7.2

Instructor-developed safety survey form and guidelines

Task 7.3

Instructor-prepared family schedule and guidelines

Task 7.4

None identified

Task 7.5

Instructor-prepared guidelines

Task 7.6

Instructor-provided worksheet

REFERENCES

Tasks 7.1-7.5

None identified

Task 7.6

Financial Planning in Agriculture. Schneeberger and Osburn.

CONCEPT/DUTY AREA

8. OPERATING THE FARM AS AN AGRICULTURAL BUSINESS

TASKS/COMPETENCIES

8.1 Establish farm financial goals

8.2 Develop plan for type and size of farm enterprise

8.3 Plan a livestock program

8.4 Develop a plan for raising young stock

8.5 Contract for breeding services

8.6 Investigate livestock improvement programs

8.7 Complete farm rent/lease agreement

8.8 Determine building insurance coverage

8.9 Determine liability insurance coverage

8.10 Transfer farm ownership

8.11 Develop plan for livestock feeding program

8.12 Develop livestock/livestock products marketing plan

8.13 Determine the feasibility of purchasing livestock insurance

8.14 Calculate depreciation

8.15 Calculate net worth of farm business

8.16 Calculate labor income

8.17 Calculate management income

8.18 Determine farm receipts and operating expenses

8.19 Complete a farm profit and loss statement

8.20 Reconcile bank statement with check register

8.21 Determine the feasibility of contracting for veterinary services

CONCEPT/DUTY AREA:

8. OPERATING THE FARM AS AN AGRICULTURAL BUSINESS

COURSE:

AGRICULTURAL PRODUCTION TECHNOLOGY (III) 8010

TASK/COMPETENCY:

8.1 Establish farm financial goals

PERFORMANCE OBJECTIVE

P8.1 Given the present factors of production (land, labor, capital, and management) and established family goals, establish farm financial goals that are compatible with individual and family resources. Goals must be submitted in a written report that includes all specified components.

CRITERION-REFERENCED MEASURE

C8.1 Written report; information presented on each of the following: a) determination of cash income needs; b) assessment of production capabilities; c) projection of income; and d) statement of tax strategies

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Review individual and family goals (Task 7.6).

2. Determine cash income needs:

   a. family living
   b. family retirement program
   c. operating expenses
   d. debt requirement
   e. capital purchases.

3. Assess available factors of production.

4. Calculate cash and accrual income sources.

5. Analyze actual financial performance of similar situations, personal past performance, and planned performance.

6. Review disposal tax strategies of capital assets.

CONCEPT/DUTY AREA:

8. OPERATING THE FARM AS AN AGRICULTURAL BUSINESS

COURSE:

AGRICULTURAL PRODUCTION TECHNOLOGY (III) 8010

TASK/COMPETENCY:

8.2 Develop plan for type and size of farm enterprise

PERFORMANCE OBJECTIVE

P8.2 Given goals, abilities, and resources, develop a plan for the type and size of farm enterprise. Completed plans must meet the criteria described in C8.2 as confirmed by instructor.

CRITERION-REFERENCED MEASURE

C8.2 Written plan; evidence that type and size of farm enterprise supports family living and provides a repayment ability needed to maintain enterprise

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Review personal and family goals.
2. Evaluate personal interests, experience, and management abilities.
3. Identify enterprises compatible with goals and abilities.
4. Inventory present resources: land, market availability, labor, capital, and management.
5. Determine size and mix of resources.
6. Select enterprise best suited to present resources.

CONCEPT/DUTY AREA:

8. OPERATING THE FARM AS AN AGRICULTURAL BUSINESS

COURSE:

AGRICULTURAL PRODUCTION TECHNOLOGY (III) 8010

TASK/COMPETENCY:

8.3 Plan a livestock program

PERFORMANCE OBJECTIVE

P8.3 Given crop acreage and yield ability and an inventory of facilities, labor, and equipment, plan a livestock program. Instructor must confirm that the program plan meets feed needs, facility requirements, and is appropriate for available labor of the farm enterprise.

CRITERION-REFERENCED MEASURE

C8.3 Livestock program plan complete and appropriate as verified by the instructor

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Determine zoning laws.
2. Evaluate plan based on prevailing climate.
3. Determine amount of feed available.
4. Assess available facilities.
5. Assess available equipment.
6. Evaluate local labor market.
7. Invite a regional farm management agent to demonstrate computerized farm management services.
8. Arrange for students to use microprocessors to process data on inventory, feed, labor costs, etc.
9. Identify records that must be maintained; select a recording method.

CONCEPT/DUTY AREA:

8. OPERATING THE FARM AS AN AGRICULTURAL BUSINESS

COURSE:

AGRICULTURAL PRODUCTION TECHNOLOGY (III) 8010

TASK/COMPETENCY:

8.4 Develop a plan for raising young stock

PERFORMANCE OBJECTIVE

P8.4 Given costs and possible returns, develop plan for raising young stock. The plan must meet the criteria stated as verified by the instructor.

CRITERION-REFERENCED MEASURE

C8.4 Written plan containing information on all of the following: a) facilities available; b) labor needed; c) breeding or purchase plans; d) costs; e) equipment needed; and f) management procedures

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Assess need for young stock.
2. Determine housing, feeding, and equipment needs.
3. Assess personnel available for care.
4. Develop variable and fixed costs.
5. Assess possible returns.
6. Compare the cost of raising young stock with that of purchasing equal quality animals.
7. Describe the benefits of raising stock with known genetic values.
8. List disease and parasite control measures.
9. Identify records that must be maintained.

CONCEPT/DUTY AREA:

8. OPERATING THE FARM AS AN AGRICULTURAL BUSINESS

COURSE:

AGRICULTURAL PRODUCTION TECHNOLOGY (III) 8010

TASK/COMPETENCY:

8.5 Contract for breeding services

PERFORMANCE OBJECTIVE

P8.5 Given information on breeding services, contract for breeding services. Instructor must confirm that contract contains all specified criteria.

CRITERION-REFERENCED MEASURE

C8.5 Contract provides for breeding efficiency, genetic improvement, and lower reproductive diseases in the farm livestock enterprise; instructor's verification

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Determine availability of breeding services.
2. Select breeding service appropriate to needs.
3. Budget for breeding services.
4. Compare costs of each type of breeding service.

CONCEPT/DUTY AREA:

8. OPERATING THE FARM AS AN AGRICULTURAL BUSINESS

COURSE:

AGRICULTURAL PRODUCTION TECHNOLOGY (III) 8010

TASK/COMPETENCY:

8.6 Investigate livestock improvement programs

PERFORMANCE OBJECTIVE

P8.6 Given information on livestock improvement services available, investigate livestock improvement programs. Results of the investigation must be presented in an oral or written report in accordance with instructor's guidelines.

CRITERION-REFERENCED MEASURE

C8.6 Oral or written report; instructor's guidelines

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Determine availability of livestock improvement programs.
2. Select improvement program appropriate to needs.
3. Budget for livestock improvement program.
4. Invite a farmer enrolled in a beef cattle improvement program or dairy herd improvement program to discuss its benefits.

CONCEPT/DUTY AREA:

8. OPERATING THE FARM AS AN AGRICULTURAL BUSINESS

COURSE:

AGRICULTURAL PRODUCTION MANAGEMENT (IV) 8012

TASK/COMPETENCY:

8.7 Complete farm rent/lease agreement

PERFORMANCE OBJECTIVE

P8.7 Given a case situation that describes rental/leasing needs, complete a farm rent/lease agreement that meets the lessee's needs. Completed lease must be rated acceptable according to standards on an instructor-provided checklist.

CRITERION-REFERENCED MEASURE

C8.7 Instructor-provided checklist; all items rated acceptable

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Review/evaluate alternative methods of rental/lease.
2. Determine appropriate method of rental/lease.
3. Secure appropriate lease form as guide.
4. Discuss terminology often found in rental agreements.
5. Adapt necessary parts of lease form to meet need of the farm enterprise:
    a. option to purchase
    b. improvement credit.
6. Invite an attorney to discuss possible changes/termination in leases.

CONCEPT/DUTY AREA:

8. OPERATING THE FARM AS AN AGRICULTURAL BUSINESS

COURSE:

AGRICULTURAL PRODUCTION TECHNOLOGY (III) 8010

TASK/COMPETENCY:

8.8 Determine building insurance coverage

PERFORMANCE OBJECTIVE

P8.8 Given size and value of each building, risk, and available insurance, determine adequate building insurance coverage. The insurance coverage must provide an amount for replacement sufficient to maintain the enterprise, as verified by the instructor.

CRITERION-REFERENCED MEASURE

C8.8 Determination that insurance coverage will provide a replacement amount sufficient to maintain the enterprise; instructor's verification

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Define insurance terms.
2. Measure size of all buildings.
3. Appraise value of each building:
   a. replacement value
   b. use value
   c. resale value
   d. depreciated value.
4. Select method of valuation.
5. Determine risks.
6. Interpret insurance coverage.
7. Compare available insurance.
8. Verify description of property.
9. Secure building insurance policies from local insurance brokers, and review in class.
10. Photograph buildings, and establish file for insurance purposes.

CONCEPT/DUTY AREA:

8. OPERATING THE FARM AS AN AGRICULTURAL BUSINESS

COURSE:

AGRICULTURAL PRODUCTION TECHNOLOGY (III) 8010

TASK/COMPETENCY:

8.9 Determine liability insurance coverage

PERFORMANCE OBJECTIVE

P8.9 Given farm value, limits of protection needs, available rates and coverage, and farm record books, determine liability insurance coverage that is adequate for the risks involved in the farm enterprise. All items on an instructor-prepared checklist must be rated acceptable.

CRITERION-REFERENCED MEASURE

C8.9 Instructor-prepared checklist; all items rated acceptable

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. List possible events for which a farmer could be held liable.
2. Assess farm value.
3. Evaluate limits of liability coverage.
4. Compare available insurance rates and coverage.
5. Evaluate insurance coverage.
6. Invite an insurance broker to discuss farm liability insurance.

CONCEPT/DUTY AREA:

8. OPERATING THE FARM AS AN AGRICULTURAL BUSINESS

COURSE:

AGRICULTURAL PRODUCTION MANAGEMENT (IV) 8012

TASK/COMPETENCY:

8.10 Transfer farm ownership

PERFORMANCE OBJECTIVE

P8.10 Given instructor's guidelines, a case situation including information on appraised value, taxes, and transfer, and information on estate planning, transfer farm ownership by completing a list of procedural steps. Listing must be complete and in accordance with instructor's guidelines.

CRITERION-REFERENCED MEASURE

C8.10 Procedures listed completely and in accordance with instructor's guidelines

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Review family goals.
2. Identify qualified appraisers.
3. State income tax obligations/implications.
4. Investigate potential investment credit recapture.
5. Identify potential depreciation recapture.
6. Evaluate potential tax savings of business ownership methods:
    a. sole ownership
    b. partnership
    c. corporate ownership.
7. Establish timetable for transfer of ownership.
8. Establish selling price.
9. Evaluate partial transfer techniques:
    a. profit sharing
    b. tenant sharing
    c. farm operating agreement
    d. gifting.
10. Analyze buying/selling plans:
    a. partial sale
    b. installment sale
    c. cash sale.

CONCEPT/DUTY AREA:

8. OPERATING THE FARM AS AN AGRICULTURAL BUSINESS

COURSE:

AGRICULTURAL PRODUCTION MANAGEMENT (IV) 8012

TASK/COMPETENCY:

8.11 Develop plan for livestock feeding program

PERFORMANCE OBJECTIVE

P8.11 Given a livestock component of a farm enterprise, develop a plan for livestock feeding program. Instructor must verify that marketing feed through livestock is profitable and that feed requirements of livestock are correct and available for the program.

CRITERION-REFERENCED MEASURE

C8.11 Livestock feeding program plan is profitable, feed requirements correct; feed availability correct; instructor's verification

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Calculate number of livestock units.

2. Determine length of time needed to carry livestock units.

3. Assess total feed needed.

4. Evaluate available amounts of feed:

   a. amount to be purchased
   b. alternate sources of purchases.

5. Develop inventory control mechanism for feed crops.

6. Compare profit from marketing feed through livestock to that from selling crops directly.

7. Maintain records.

CONCEPT/DUTY AREA:

8. OPERATING THE FARM AS AN AGRICULTURAL BUSINESS

COURSE:

AGRICULTURAL PRODUCTION MANAGEMENT (IV) 8012

TASK/COMPETENCY:

8.12 Develop livestock/livestock products marketing plan

PERFORMANCE OBJECTIVE

P8.12 Given livestock/livestock products component of farm enterprise, develop livestock/livestock products marketing plan. Plan must include: a) number of livestock to be marketed; b) identification of markets available for each product; c) statement of most profitable market; and d) estimate of costs.

CRITERION-REFERENCED MEASURE

C8.12 Marketing plan; all components included

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Assess marketing strategies.
2. Identify strategies appropriate to farm enterprise:
    a. cash marketing
    b. futures marketing
    c. selling breeding stock.
3. Determine number of livestock to be marketed.
4. Analyze livestock products to be marketed.
5. Identify available markets.
6. Identify most profitable market, and assess capital gains tax advantages.
7. Assess livestock/livestock products transportation needs.
8. Identify records that must be maintained.

CONCEPT/DUTY AREA:

8. OPERATING THE FARM AS AN AGRICULTURAL BUSINESS

COURSE:

AGRICULTURAL PRODUCTION MANAGEMENT (IV) 8012

TASK/COMPETENCY:

8.13 Determine the feasibility of purchasing livestock insurance

PERFORMANCE OBJECTIVE

P8.13 Given the need for livestock insurance and information about available insurance, determine the feasibility of purchasing livestock insurance. Instructor must verify that insurance provides adequate risk coverage for the farm enterprise.

CRITERION-REFERENCED MEASURE

C8.13 Livestock insurance providing adequate risk coverage for specific farm enterprise; instructor's verification

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Assess livestock insurance needs.
2. Explain the concepts of risk and uncertainty.
3. Determine the fair market value of livestock.
4. Identify various insurance programs available.
5. Determine true cost of insurance program.
6. Budget for insurance needs.
7. Identify appropriate insurance.
8. List events that could cause livestock loss.

CONCEPT/DUTY AREA:

.8. OPERATING THE FARM AS AN AGRICULTURAL BUSINESS

COURSE:

AGRICULTURAL PRODUCTION MANAGEMENT (IV) 8012

TASK/COMPETENCY:

8.14 Calculate depreciation

PERFORMANCE OBJECTIVE

P8.14 Given farm records, calculate depreciation. All calculations must be completed with 100% accuracy, and the depreciation method chosen must be verified by the instructor as the most advantageous to the farm enterprise for the current year.

CRITERION-REFERENCED MEASURE

C8.14 Depreciation calculations 100% accurate; depreciation method chosen the most advantageous as verified by instructor

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Determine depreciation records needed for farm business.
2. List depreciation methods available.
3. Compare advantages and disadvantages of each method.
4. Develop depreciation records for farm livestock, equipment, and facilities; discuss the best method to use for each.

CONCEPT/DUTY AREA:

8. OPERATING THE FARM AS AN AGRICULTURAL BUSINESS

COURSE:

AGRICULTURAL PRODUCTION MANAGEMENT (IV) 8012

TASK/COMPETENCY:

8.15 Calculate net worth of farm business

PERFORMANCE OBJECTIVE

P8.15 Given instruction on net worth, calculate net worth of farm business. All calculations must be completed with 100% accuracy, and must show net worth gain from productivity on a cost basis and net worth at market value as verified by the instructor.

CRITERION-REFERENCED MEASURE

C8.15 Net worth calculated correctly and accurately; instructor's verification

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Assess assets:
   a. list all property
   b. assign fair market value to all property.
2. Determine liabilities:
   a. list all obligations
   b. record amount of each obligation.
3. Obtain net worth forms used by local bankers; distribute to students and discuss.

CONCEPT/DUTY AREA:

8. OPERATING THE FARM AS AN AGRICULTURAL BUSINESS

COURSE:

AGRICULTURAL PRODUCTION MANAGEMENT (IV) 8012

TASK/COMPETENCY:

8.16 Calculate labor income

PERFORMANCE OBJECTIVE

P8.16 Given information, resources, and an instructor-provided worksheet, calculate labor income. Worksheet must be completed with 90% accuracy.

CRITERION-REFERENCED MEASURE

C8.16 Instructor-provided worksheet; 90% accuracy

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Assign a rate of return on farm investment.
2. Assign a management payment.
3. Review records needed to calculate labor income.
4. Maintain labor income records.
5. Investigate computer software available for calculating and recordkeeping purposes.

CONCEPT/DUTY AREA:

8. OPERATING THE FARM AS AN AGRICULTURAL BUSINESS

COURSE:

AGRICULTURAL PRODUCTION MANAGEMENT (IV) 8012

TASK/COMPETENCY:

8.17 Calculate management income

PERFORMANCE OBJECTIVE

P8.17 Given financial records and an instructor-provided worksheet, calculate management income. Worksheet must be completed with 90% accuracy.

CRITERION-REFERENCED MEASURE

C8.17 Instructor-provided worksheet; 90% accuracy

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Assign a rate of return on farm investment.
2. Assign a labor income.
3. Review records needed to calculate management income.
4. Investigate professional management services.

CONCEPT/DUTY AREA:

8. OPERATING THE FARM AS AN AGRICULTURAL BUSINESS

COURSE:

AGRICULTURAL PRODUCTION MANAGEMENT (IV) 8012

TASK/COMPETENCY:

8.18 Determine farm receipts and operating expenses

PERFORMANCE OBJECTIVE

P8.18 Given a case situation including information on income received and expenditures made, determine farm receipts and operating expenses on a monthly basis by completing an instructor-prepared worksheet with 90% accuracy.

CRITERION-REFERENCED MEASURE

C8.18 Instructor-prepared worksheet; 90% accuracy

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Describe types of recordkeeping systems.
2. Identify information needed for selected method.
3. List all expenses.
4. Define prorate.
5. Calculate monthly/yearly farm receipts.
6. Discuss software programs available for accounting purposes.
7. Determine operating margin for a specific unit of operation.
8. Calculate personal expenses and farm expenses.

CONCEPT/DUTY AREA:

8. OPERATING THE FARM AS AN AGRICULTURAL BUSINESS

COURSE:

AGRICULTURAL PRODUCTION MANAGEMENT (IV) 8012

TASK/COMPETENCY:

8.19 Complete a farm profit and loss statement

PERFORMANCE OBJECTIVE

P8.19 Given farm financial information and records, complete a farm profit and loss statement. The statement must include all profits and all losses and be completed with 100% accuracy.

CRITERION-REFERENCED MEASURE

C8.19 Profit and loss statement completed fully with 100% accuracy

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Review procedures for calculating cash income and expenditures.
2. Review procedures for calculating inventories and depreciation schedules.
3. Determine value of unpaid family labor and farm produce used at home.
4. Discuss each component of a profit and loss form.
5. Investigate financial recordkeeping services.

CONCEPT/DUTY AREA:

8. OPERATING THE FARM AS AN AGRICULTURAL BUSINESS

COURSE:

AGRICULTURAL PRODUCTION MANAGEMENT (IV) 8012

TASK/COMPETENCY:

8.20 Reconcile bank statement with check register

PERFORMANCE OBJECTIVE

P8.20 Given a sample bank statement and check register, reconcile the statement and register. Register balance and statement balance must be reconciled with 100% accuracy.

CRITERION-REFERENCED MEASURE

C8.20 Statement and register reconciled with 100% accuracy

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Identify components of a bank statement.
2. Arrange deposit slips in chronological order.
3. Check statement for recording of deposits.
4. Arrange checks in numerical order.
5. Check statement for recording of checks.
6. Record service charges.
7. List outstanding checks.

CONCEPT/DUTY AREA:

8. OPERATING THE FARM AS AN AGRICULTURAL BUSINESS

COURSE:

AGRICULTURAL PRODUCTION MANAGEMENT (IV) 8012

TASK/COMPETENCY:

8.21 Determine the feasibility of contracting for veterinary services

PERFORMANCE OBJECTIVE

P8.21 Given information on veterinary services available in the community, determine the feasibility of contracting for veterinary services. All items on an instructor-prepared checklist must be rated acceptable.

CRITERION-REFERENCED MEASURE

C8.21 Instructor-prepared checklist; all items rated acceptable

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Discuss the concept of contracted veterinary services.
2. Assess the need for veterinary services.
3. Determine the availability of contracted veterinary services in the area.
4. Provide samples of veterinary contracts, and discuss the costs of various services.

CONCEPT/DUTY AREA:

8. OPERATING THE FARM AS AN AGRICULTURAL BUSINESS

COURSE:

AGRICULTURAL PRODUCTION MANAGEMENT (IV) 8012

TASK/COMPETENCY:

8.22 Determine the feasibility of contracting for machinery and equipment repair services

PERFORMANCE OBJECTIVE

P8.22 Given information on repair services available in the community, determine the feasibility of contracting for machinery and equipment repair services. All items on an instructor-prepared checklist must be rated acceptable.

CRITERION-REFERENCED MEASURE

C8.22 Instructor-prepared checklist; all items rated acceptable

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. List equipment and machinery that would be covered by a contract.
2. Calculate repair costs for the previous year.
3. Identify companies in the area that provide repair services.
4. Review warranties on specified machinery.
5. Determine costs of replacement parts.

CONCEPT/DUTY AREA:

8. OPERATING THE FARM AS AN AGRICULTURAL BUSINESS

COURSE:

OPERATING THE FARM BUSINESS (V) 8014

TASK/COMPETENCY:

8.23 Identify labor management procedures

PERFORMANCE OBJECTIVE

P8.23 Given information and resources, identify labor management procedures with 80% accuracy on an instructor-prepared written test.

CRITERION-REFERENCED MEASURE

C8.23 Instructor-prepared written test; 80% accuracy

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Describe the components of a labor force plan including the assessment of labor needs and the use of full-time and part-time employees.
2. Discuss hiring and firing procedures.
3. Identify methods of assessing worker performance.
4. Assess the degree of competency required for a particular job.
5. Assign research on federal labor laws and regulations.
6. Discuss pay scales, wage incentives, and fringe benefits.
7. Explain training procedures.

CONCEPT/DUTY AREA:

8. OPERATING THE FARM AS AN AGRICULTURAL BUSINESS

COURSE:

OPERATING THE FARM BUSINESS (V) 8014

TASK/COMPETENCY:

8.24 Develop budget for changing the livestock program

PERFORMANCE OBJECTIVE

P8.24 Given financial records, information on zoning laws, and instructor's guidelines, develop a budget for changing the livestock program. Budget must be completed in accordance with instructor's guidelines.

CRITERION-REFERENCED MEASURE

C8.24 Budget completed in accordance with instructor's guidelines

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Review financial records from the previous year.
2. Determine local zoning laws.
3. Evaluate marketing forecasts.
4. Describe alternative livestock programs.
5. Analyze the economic feasibility of the additional housing, equipment, and labor needed to change the program.
6. Project potential profits.

CONCEPT/DUTY AREA:

8. OPERATING THE FARM AS AN AGRICULTURAL BUSINESS

COURSE:

OPERATING THE FARM BUSINESS (V) 8014

TASK/COMPETENCY:

8.25 Develop an expansion plan

PERFORMANCE OBJECTIVE

P8.25 Given farm goals and projected growth, develop a plan for expansion of existing facilities or building new farm buildings. The plan must be rated acceptable according to criteria specified on an instructor-prepared worksheet.

CRITERION-REFERENCED MEASURE

C8.25 Instructor-prepared worksheet; all items rated acceptable

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Assess the need for expansion or new farm buildings.
2. Inventory existing facilities.
3. Determine capacity, adaptability, and alternate use.
4. Assess cost of repair, remodeling, and expansion of existing facilities.
5. Compare cost of replacement with cost of new facilities.
6. Develop partial budget information.
7. Determine profitability and repayment factors of facilities.
8. Select most profitable alternative.
9. Plan for cash flow ability to service money demands for purchase and operation:
    a. evaluate investment credit advantages
    b. evaluate implications of disposal.
10. Investigate possibilities of renting or leasing buildings.

CONCEPT/DUTY AREA:

8. OPERATING THE FARM AS AN AGRICULTURAL BUSINESS

COURSE:

OPERATING THE FARM BUSINESS (V) 8014

TASK/COMPETENCY:

8.26 Complete federal income tax form

PERFORMANCE OBJECTIVE

P8.26 Given completed federal tax schedules and other information about a simulated farm enterprise, complete a federal income tax form according to criteria stated.

CRITERION-REFERENCED MEASURE

C8.26 Information presented on form must be complete and accurate, and all computations must be correct as verified by a comparison with instructor's form

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Calculate capital gains and losses.
2. Calculate totals of farm income and expenses.
3. Complete income or loss schedule.
4. Complete investment credit schedule.
5. List farm income eligible for FICA taxes.
6. Identify information needed to complete income tax form.
7. Obtain copies of various tax forms, distribute to class, and discuss purpose of each.
8. Discuss various tax consultant services and the feasibility of contracting for such a service.

CONCEPT/DUTY AREA:

8. OPERATING THE FARM AS AN AGRICULTURAL BUSINESS

COURSE:

OPERATING THE FARM BUSINESS (V) 8014

TASK/COMPETENCY:

8.27 Complete state income tax form

PERFORMANCE OBJECTIVE

P8.27 Given completed federal tax forms and appropriate W-2 forms, complete state income tax form. Completed form must include all state income tax elements of the farm enterprise and calculations must be without error as verified by the instructor.

CRITERION-REFERENCED MEASURE

C8.27 Form completed fully and without error; instructor's verification

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Transfer amounts listed on federal tax forms to appropriate places on state tax forms.
2. Calculate total income.
3. Calculate total expense.
4. Calculate tax due or refund.
5. Enter information in appropriate boxes on tax forms.
6. Attach check or request refund.
7. Attach W-2 forms to state income tax form.

CONCEPT/DUTY AREA:

8. OPERATING THE FARM AS AN AGRICULTURAL BUSINESS

COURSE:

OPERATING THE FARM BUSINESS (V) 8014

TASK/COMPETENCY:

8.28 Prepare farm payroll records

PERFORMANCE OBJECTIVE

P8.28 Given gross wages, withholding items, net wages, and payroll rules and regulations, prepare farm payroll records. Completed records must be in agreement with instructor's master record.

CRITERION-REFERENCED MEASURE

C8.28 Payroll records completed fully and accurately as verified by comparison with instructor's master record.

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Record gross wages.
2. Record items withheld by employer.
3. Record items paid by employer.
4. Record net wages.
5. Record deposits made to Social Security, Federal Income Tax, State Income Tax, Worker's Compensation, Profit Sharing Plans, etc.
6. Record and prepare detailed statements for employer, employee, and government agencies.

CONCEPT/DUTY AREA:

8. OPERATING THE FARM AS AN AGRICULTURAL BUSINESS

COURSE:

OPERATING THE FARM BUSINESS (V) 8014

TASK/COMPETENCY:

8.29 Develop a credit plan for the farm business

PERFORMANCE OBJECTIVE

P8.29 Given instruction on farm credit and an instructor-provided checklist, develop a credit plan for the farm business. Plan must be rated acceptable according to criteria stated on instructor's checklist.

CRITERION-REFERENCED MEASURE

C8.29 Credit plan rated acceptable in accordance with instructor-prepared checklist

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Determine need for credit plan for farm business.

2. Complete financial statements:

   a. net worth statement
   b. profit/loss
   c. cash flow statement
   d. comparative standard analysis sheet.

3. Identify items for which credit will be needed.

4. Assess sources of lending services.

5. Select a lending service.

CONCEPT/DUTY AREA:

8. OPERATING THE FARM AS AN AGRICULTURAL BUSINESS

COURSE:

OPERATING THE FARM BUSINESS (V) 8014

TASK/COMPETENCY:

8.30 Develop a plan for bestowing the estate

PERFORMANCE OBJECTIVE

P8.30 Given instructor's guidelines, information on estate planning, state and local legal requirements, and a case situation, develop a plan for bestowing the estate. The plan must be completed with 90% accuracy in accordance with instructor's guidelines.

CRITERION-REFERENCED MEASURE

C8.30 Plan developed with 90% accuracy; instructor's guidelines

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Determine assets, liabilities, and net worth.
2. Identify heirs and alternative heirs.
3. Identify estate goals.
4. Explain legal requirements.
5. Review alternative methods of bestowal.

EQUIPMENT AND MATERIALS

Tasks 8.1-8.2

Calculator

Tasks 8.3-8.4

Microprocessors (optional)
Calculators

Task 8.5

Calculator

Task 8.6

Instructor-provided guidelines

Task 8.7

Instructor-provided checklist

Task 8.8

Calculator
Camera
Measuring tape

Task 8.9

Calculator
Instructor-prepared checklist

Task 8.10

Instructor-provided guidelines
Instructor-prepared case study

Tasks 8.11-8.13

Calculator

Task 8.14

Calculator
IRS publications

Task 8.15

Calculator
Farm financial records, inventories

Task 8.16

Instructor-provided worksheet
Agriculture labor publications

Task 8.17

Instructor-provided worksheet
Agriculture management publications

Task 8.18

Calculator
Instructor-prepared materials: Case situation
Worksheet

Task 8.19

Instructor-provided profit/loss statement form
Calculator

Task 8.20

Calculator
Bank statements
Cancelled checks
Checkbook
Check register
Deposit slips

Task 8.21

Sample veterinary contracts
Instructor-prepared checklist

Task 8.22

Instructor-prepared checklist

Task 8.23

Internal Revenue tax publications
Instructor-prepared written test

RESOURCES

Tasks 8.3-8.4

Software: Livestock Management Games: Cattle, Dairy, Sheep, and Swine. (Apple II, TRS, IMB). AAVIM.

Tasks 8.8-8.9

Slides/Cassettes: Insurance in The Farm Business. Vocational Agriculture Service.

Task 8.11

Software: Livestock Programs. (Apple II). Vocational Agriculture Service.

Task 8.14

Software: Types of and Calculating Depreciation. (Apple II). AAVIM.

REFERENCES

Task 8.1

Farm and Ranch Business Management. John Deere Company.
Farm Business Manager. V-TECS.
Farm Management Guide. Doane Publishing.
Modern Agriculture Management. Schneeberger and Osburn.

Task 8.2

Farm and Ranch Business Management. John Deere Company.
Farm Management Guide. Doane Publishing.
Income Possibilities for Your Farm. Vocational Agriculture Service.
Planning a Profitable Farm Business. Vocational Agriculture Service.
Planning for Repayment of Loans. Vocational Agriculture Service.

Task 8.3

Farm and Ranch Business Management. John Deere Company.
Farm Business Manager. V-TECS.
Farm Management Guide. Doane Publishing.
Farming and The Computer. AAVIM.
Planning Livestock for the Farm. Vocational Agriculture Service.

Task 8.4

Farm and Ranch Business Management. John Deere Company.
Farm Business Manager. V-TECS.
Farm Management Guide. Doane Publishing.

Tasks 8.5-8.6

Farm and Ranch Business Management. John Deere Company.
Farm Business Manager. V-TECS.
Farm Management Guide. Doane Publishing.
Working with Animal Supplies and Services. Dillon.

Task 8.7

Agricultural Finance. Lee.
Farm and Ranch Business Management. John Deere Company.
Farm Management Guide. Doane Publishing.

Task 8.8

Agricultural Finance. Lee.
Building an Insurance Program. Ohio Agricultural Education Curriculum Materials Service.
Farm and Ranch Business Management. John Deere Company.
Farm Management Guide. Doane Publishing.

Task 8.9

Agricultural Business Money Management. Ohio Agricultural Education Curriculum Materials Service.
Agricultural Finance. Lee.
Building an Insurance Program. Ohio Agricultural Education Curriculum Materials Service.
Farm and Ranch Business Management. John Deere Company.
Farm Management Guide. Doane Publishing.

Task 8.10

Agricultural Finance. Lee.
Farm and Ranch Business Management. John Deere Company.
Farm Business Manager. V-TECS.
Farm Management Guide. Doane Publishing.
Mechanics of Land Transfer. Vocational Agriculture Service.

Task 8.11

Farm and Ranch Business Management. John Deere Company.
Farm Business Manager. V-TECS.
Farm Management Guide. Doane Publishing.

Task 8.12

Farm and Ranch Business Management. John Deere Company.
Farm Business Manager. V-TECS.
Farm Management Guide. Doane Publishing.
Working in Animal Science. Peterson and others.

Task 8.13

Farm and Ranch Business Management. John Deere Company.
Farm Business Manager. V-TECS.
Farm Management Guide. Doane Publishing.

Task 8.14

Agricultural Finance. Lee.
Cowboy Litigation. Keast and Oppenheimer.
Farm and Ranch Business Management. John Deere Company.
Farm Management Guide. Doane Publishing.
Modern Agriculture Management. Schneeberger and Osburn.

Task 8.15

Agricultural Finance. Lee.
Farm and Ranch Business Management. John Deere Company.
Farm Management Guide. Doane Publishing.

Task 8.16

Farm and Ranch Business Management. John Deere Company.
Farm Management Guide. Doane Publishing.

Task 8.17

Agricultural Finance. Lee.
Farm and Ranch Business Management. John Deere Company.
Farm Management Guide. Doane Publishing.

Tasks 8.18-8.19

Agricultural Business Money Management. Ohio Agricultural Education Curriculum Materials Service.
Agricultural Finance. Lee.
Farm and Ranch Business Management. John Deere Company.
Farm Business Manager. V-TECS.
Farm Management Guide. Doane Publishing.

Task 8.20

Farm and Ranch Business Management. John Deere Company.
Farm Management Guide. Doane Publishing.
Using Savings and Checking Accounts. Ohio Agricultural Education Curriculum Materials Service.

Tasks 8.21-8.22

Farm and Ranch Business Management. John Deere Company.
Farm Business Manager. V-TECS.
Farm Management Guide. Doane Publishing.

Task 8.23

Agricultural Finance. Lee.
Balancing The Labor Supply and The Farm Business. Vocational Agriculture Service.
Farm and Ranch Business Management. John Deere Company.
Farm Management Guide. Doane Publishing.

Tasks 8.24-8.25

Farm and Ranch Business Management. John Deere Company.
Farm Business Manager. V-TECS.
Farm Management Guide. Doane Publishing.

Tasks 8.26-8.27-8.28

Agricultural Finance. Lee.
Cowboy Litigation. Keast and Oppenheimer.
Farm and Ranch Business Management. John Deere Company.
Farm Business Manager. V-TECS.
Farm Management Guide. Doane Publishing.
Modern Agriculture Management. Osburn and Schneeberger.

Task 8.29

Agricultural Finance. Lee.
Determining Credit Needs on The Farm. Vocational Agriculture Service.
Factors Involved in The Borrowing Process. Vocational Agriculture Service.
Farm and Ranch Business Management. John Deere Company.
Farm Management Guide. Doane Publishing.
Modern Agriculture Management. Schneeberger and Osburn.
Planning for Repayment of Loans. Vocational Agriculture Service.
Sources of Farm Credit. Vocational Agriculture Service.

Task 8.30

Agricultural Finance. Lee.
Farm and Ranch Business Management. John Deere Company.
Farm Management Guide. Doane Publishing.

CONCEPT/DUTY AREA

9. PRODUCING POULTRY

TASKS/COMPETENCIES

9.1 Identify poultry breeds

9.2 Describe feeding practices

9.3 Plan a marketing program

9.4 Develop a disease and parasite control plan

9.5 Describe poultry management practices

CONCEPT/DUTY AREA:

9. PRODUCING POULTRY

COURSE:

AGRICULTURAL PRODUCTION
MANAGEMENT (IV) 8012
OPERATING THE FARM
BUSINESS (V) 8014

TASK/COMPETENCY:

9.1 Identify poultry breeds

PERFORMANCE OBJECTIVE

P9.1 Given information on the types of poultry and the various breeds of each type, identify poultry breeds on an instructor-prepared test with 90% accuracy.

CRITERION-REFERENCED MEASURE

C9.1 Instructor-prepared test; 90% accuracy

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Discuss the importance of the poultry industry.
2. Describe the types of poultry enterprises.
3. Survey the community to determine popular breeds of poultry.
4. List the sources for various poultry.
5. State the advantages and disadvantages of producing a particular breed of poultry.
6. Determine sources of poultry used by local producers.
7. Demonstrate the proper method of culling hens.

CONCEPT/DUTY AREA:

9. PRODUCING POULTRY

COURSE:

AGRICULTURAL PRODUCTION
MANAGEMENT (IV) 8012
OPERATING THE FARM
BUSINESS (V) 8014

TASK/COMPETENCY:

9.2 Describe feeding practices

PERFORMANCE OBJECTIVE

P9.2 Given instructor's guidelines and information on a specific poultry enterprise, describe the feeding practices appropriate for that enterprise. The description should be made in a written or oral report in accordance with instructor's guidelines.

CRITERION-REFERENCED MEASURE

C9.2 Written or oral report; instructor's guidelines

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Explain the feeding practices for chickens.
2. Discuss the feeding practices for turkeys.
3. Discuss the feeding practices for ducks and geese.
4. Construct feeding equipment.
5. Arrange for students to visit a poultry production enterprise.

CONCEPT/DUTY AREA:

9. PRODUCING POULTRY

COURSE:

AGRICULTURAL PRODUCTION
MANAGEMENT (IV) 8012
OPERATING THE FARM
BUSINESS (V) 8014

TASK/COMPETENCY:

9.3 Plan a marketing program

PERFORMANCE OBJECTIVE

P9.3 Given information on a specific poultry enterprise, plan a marketing program for the enterprise. The plan must meet all criteria listed on an instructor-provided checklist.

CRITERION-REFERENCED MEASURE

C9.3 Instructor-provided checklist; all items rated acceptable

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Describe the production and price trends in poultry products.
2. List the steps in marketing broilers.
3. Describe the classes of live poultry.
4. Explain the grades of ready-to-cook poultry.
5. List the steps in marketing eggs.
6. List the classes and grades of eggs.
7. Arrange for class to visit a poultry processing plant.

CONCEPT/DUTY AREA:

9. PRODUCING POULTRY

COURSE:

AGRICULTURAL PRODUCTION
MANAGEMENT (IV) 8012
OPERATING THE FARM
BUSINESS (V) 8014

TASK/COMPETENCY:

9.4 Develop a disease and parasite control plan

PERFORMANCE OBJECTIVE

P9.4 Given instructor's guidelines and information on a specific poultry enterprise, develop a disease and parasite control plan. Plan must contain all specified components and be written in accordance with instructor's guidelines.

CRITERION-REFERENCED MEASURE

C9.4 Control plan includes: a) statement of diseases common to specific types of poultry; b) statement of parasites common to specific type of poultry; c) methods of treating diseases and parasites; and d) methods of preventing disease and parasite outbreaks; in accordance with instructor's guidelines

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. List diseases common to poultry.
2. Identify symptoms associated with various diseases.
3. Name parasites common to poultry.
4. Describe methods of treating various diseases.
5. Discuss ways to prevent parasitic outbreaks.
6. Invite a veterinarian to speak to class about the control of poultry diseases.

CONCEPT/DUTY AREA:

9. PRODUCING POULTRY

COURSE:

AGRICULTURAL PRODUCTION
MANAGEMENT (IV) 8012
OPERATING THE FARM
BUSINESS (V) 8014

TASK/COMPETENCY:

9.5 Describe poultry management practices

PERFORMANCE OBJECTIVE

P9.5 Given information on a specific poultry enterprise, describe poultry management practices for that enterprise. Practices described must concur with the approved management practices identified in Modern Livestock and Poultry Production.

CRITERION-REFERENCED MEASURE

C9.5 Description of management practices; Modern Livestock and Poultry Production

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Explain various management practices for chickens.
2. Survey local poultry producers, and compile a list of management practices used in the community.
3. Discuss various management practices for turkeys.
4. Outline the advantages and disadvantages of each type of management practice.

EQUIPMENT AND MATERIALS

Task 9.1

Pictures of poultry breeds
Instructor-prepared test

Task 9.2

Instructor-provided guidelines

Task 9.3

USDA Poultry Grading Manual
Instructor-prepared checklist

Task 9.4

Instructor-provided guidelines

Task 9.5

None identified

REFERENCES

Tasks 9.1-9.5

Modern Livestock and Poultry Production. Gillespie.
Poultry Farmer. V-TECS.

CONCEPT/DUTY AREA

10. MANAGING AN APIARY

TASKS/COMPETENCIES

10.1 Select site for hive

10.2 Identify beekeeping equipment and supplies

10.3 Select honeybee stock

10.4 Determine feeding needs

10.5 Identify diseases, insects, and parasites

10.6 Develop a marketing plan

CONCEPT/DUTY AREA:

10. MANAGING AN APIARY

COURSE:

AGRICULTURAL PRODUCTION
MANAGEMENT (IV) 8012
OPERATING THE FARM
BUSINESS (V) 8014

TASK/COMPETENCY:

10.1 Select site for hive

PERFORMANCE OBJECTIVE

P10.1 Given descriptions of three possible sites for the location of an apiary, or an opportunity to visit three different sites, select one site for locating the hive. Selection must include a written or oral explanation addressing the specified factors.

CRITERION-REFERENCED MEASURE

C10.1 Site selection based on the following factors: a) site with the most appropriate exposure to sunlight; b) site in closest proximity to appropriate flowering plants; c) site with the best air circulation and water drainage; and d) site with available fresh water

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Identify state or local ordinances applicable to beekeeping.
2. Explain the importance of sunlight in site selection and the effects of temperature extremes.
3. List advantages in selecting a secluded site for the hive.
4. Discuss the importance of fresh water, air circulation, and water drainage.
5. Describe the types of flowering plants to which bees are attracted and the recommended proximity of plants to the hive.
6. Explain the use of shrubs or fences:
    a. to force bees to fly higher
    b. to serve as a windbreak.
7. Determine if pesticides or other chemicals are applied in the surrounding area.

CONCEPT/DUTY AREA:

10. MANAGING AN APIARY

COURSE:

AGRICULTURAL PRODUCTION
MANAGEMENT (IV) 8012
OPERATING THE FARM
BUSINESS (V) 8014

TASK/COMPETENCY:

10.2 Identify beekeeping equipment and supplies

PERFORMANCE OBJECTIVE

P10.2 Given a hive, hive tool, head gear, and other assorted tools and equipment, identify beekeeping equipment and supplies by stating the name and use of each item. Eight of ten items must be identified correctly.

CRITERION-REFERENCED MEASURE

C10.2 Eight of ten items identified correctly

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Describe a Langstroth hive.
2. Arrange for students to visit apiaries in the community; compare the types of hives used.
3. Define comb foundation, honey extractor, brood nest, and honey-storage supers.
4. Demonstrate the use of a bee smoker.
5. Explain the uses of a bee brush, hive tool, and queen excluder.
6. Describe the effects on bees of hairy, woolen clothes and blue and brown colors.
7. Discuss the use of head gear and gloves.

CONCEPT/DUTY AREA:

10. MANAGING AN APIARY

COURSE:

AGRICULTURAL PRODUCTION MANAGEMENT (IV) 8012
OPERATING THE FARM BUSINESS (V) 8014

TASK/COMPETENCY:

10.3 Select honeybee stock

PERFORMANCE OBJECTIVE

P10.3 Given resources and information, select honeybee stock by completing an instructor-prepared written test with 90% accuracy.

CRITERION-REFERENCED MEASURE

C10.3 Instructor-prepared test; 90% accuracy

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Define swarm, "bee glue", placid, temperament, propolis, and hybrid.
2. Describe the characteristics of worker bees, drones, and the queen bee.
3. Outline the life cycle of each type of bee.
4. Trace the development of each type of bee from egg to adult stage.
5. Explain the advantages and disadvantages of stocking an apiary with Italian bees, Carniolan bees, Caucasian bees, and the German black (brown) bees.
6. Interview beekeepers in the community; identify the most popular strain of bee.

CONCEPT/DUTY AREA:

10. MANAGING AN APIARY

COURSE:

AGRICULTURAL PRODUCTION
MANAGEMENT (IV) 8012
OPERATING THE FARM
BUSINESS (V) 8014

TASK/COMPETENCY:

10.4 Determine feeding needs

PERFORMANCE OBJECTIVE

P10.4 Given information on the size of new hive, determine feeding needs for the first month of establishing the hive. Determination must be within 5% of amount and type determined by the instructor.

CRITERION-REFERENCED MEASURE

C10.4 Feeding needs determined within 5% of instructor's determination

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Demonstrate how to make sugar syrup, and discuss instances when it is used.
2. Explain the need for fresh water.
3. Discuss the feeding requirements of new hive.
4. State the sources of food used in the spring.
5. List examples of pollen substitutes, and discuss uses.
6. Discuss how much honey should be left in the hive and the importance of adequate food for winter and early spring.

CONCEPT/DUTY AREA:

10. MANAGING AN APIARY

COURSE:

AGRICULTURAL PRODUCTION
MANAGEMENT (IV) 8012
OPERATING THE FARM
BUSINESS (V) 8014

TASK/COMPETENCY:

10.5 Identify diseases, insects, and parasites

PERFORMANCE OBJECTIVE

P10.5 Given instructor's guidelines and a listing of the various natural threats to the honeybee, identify diseases, insects, and parasites by selecting one topic from the list and presenting an oral report to the class. Report must be made in accordance with instructor's guidelines.

CRITERION-REFERENCED MEASURE

C10.5 Oral report; instructor's guidelines

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Describe the bacterial disease American foulbrood.
2. Define European foulbrood, sacbrood, chalkbrood, and nosema.
3. Explain the differences between American foulbrood and European foulbrood.
4. State the problems caused by wax moths, earwigs, centipedes, and other insects.
5. List the names of the types of mites dangerous to bees.
6. Explain methods of prevention and treatment of various diseases.
7. List typical animal pests such as mice, skunks, and bears, and describe effective controls.
8. Explain the immediate and long-range dangers associated with pesticides.
9. State the problems associated with using second-hand hives.

CONCEPT/DUTY AREA:

10. MANAGING AN APIARY

COURSE:

AGRICULTURAL PRODUCTION
MANAGEMENT (IV) 8012
OPERATING THE FARM
BUSINESS (V) 8014

TASK/COMPETENCY:

10.6 Develop a marketing plan

PERFORMANCE OBJECTIVE

P10.6 Given information on extracting honey, costs associated with maintaining a hive, equipment and supply costs, and potential markets in the locality, develop a marketing plan. Plan must be rated acceptable in accordance with an instructor-provided checklist.

CRITERION-REFERENCED MEASURE

C10.6 Marketing plan; instructor-provided checklist

ENABLING OBJECTIVES/LEARNING ACTIVITIES

1. Explain the contents of honey, and discuss its uses.
2. Demonstrate how to extract honey.
3. Identify uncapping knives, extractor, and strainers.
4. List the advantages and disadvantages of extracted honey versus comb honey.
5. Investigate pollinating fees in the locality.
6. Explain the uses of beeswax, and identify potential markets.
7. Construct a solar wax melter.
8. Determine federal, state, and local laws concerning marketing, labeling, and selling honey.

EQUIPMENT AND MATERIALS

Task 10.1

Instructor-prepared descriptions of sites (optional)

Task 10.2

- Hive tool
- Hive
- Bee smoker
- Head gear
- Gloves

Task 10.3

Instructor-prepared test
Slides/photographs of different breeds of bees

Task 10.4

Instructor-provided information on establishing a new hive

Task 10.5

Instructor-provided materials: list of topics
guidelines for report

Task 10.6

Instructor-provided checklist

REFERENCES

Task 10.1

The Complete Guide to Beekeeping. Morse.
Keeping Bees. Vivian.

Task 10.2

The Beekeeper's Handbook. Meyer.
The Complete Guide to Beekeeping. Morse.
Keeping Bees. Vivian.

Task 10.3

How to Keep Bees and Sell Honey. Kelley.
Keeping Bees. Vivian.

Task 10.4

The Complete Guide to Beekeeping. Morse.
How to Keep Bees and Sell Honey. Kelley.
Keeping Bees. Vivian.

Task 10.5

The Beekeeper's Handbook. Meyer.
The Complete Guide to Beekeeping. Morse.
Keeping Bees. Vivian.

Task 10.6

The Beekeeper's Handbook. Meyer
How to Keep Bees and Sell Honey. Kelley.

SECTION 2

PROGRAMS AND COURSES

The agricultural production program and courses described in this section are based on the task analyses presented in Section 1. The program and courses have been approved by the Virginia Department of Education.

The course outlines and suggested teaching sequences in this section are not complete. Tasks from the Livestock Production Task Analyses should be incorporated in Year IV and Year V instruction. Wherever possible, tasks should be modified to meet actual SOEP and cooperative education work experiences.

SECONDARY PROGRAMS AND COURSES

PROGRAM TITLE:	Agricultural Production
DESCRIPTION:	The curriculum for the three Agricultural Production courses is based on the assumption that students have completed the courses of Agricultural Science and Mechanics I and II. The major emphasis is directed toward helping students become more proficient in animal, plant, and soil sciences and in farm business management and agricultural mechanics. Leadership training is provided, and supervised occupational experience programs are incorporated whenever possible.
CIP Code:	01.0301
Suggested Grade Level:	10, 11, 12

Approved Course	VA COURSE CODE	DOT CODE	DOT TITLE
Agricultural Production Technology (III)	8010		See the Guide Application Page (inside front cover) for a complete listing of DOT codes and titles
Agricultural Production Management (IV)	8012		
Operating The Farm Business (V)	8014		

AGRICULTURAL PRODUCTION TECHNOLOGY III (8010)

COURSE DESCRIPTION: Agricultural Production Technology (III) is a one-year occupational preparation course offered at the tenth- or eleventh-grade level. When only single periods are provided, greater emphasis is placed on individualized instruction and supervised occupational experience programs. The major emphasis in the agricultural production program is the attainment of competencies in one or more areas of plant science, animal science, soil science, agricultural business management, and agricultural mechanization, based upon the student's employment objective. The course includes appropriate instruction in agricultural mechanics, crop production, farm family living, and basic farm management. Supervised occupational experience programs and leadership training are important parts of the course.

PREREQUISITE: Agricultural Science and Mechanics II

SUGGESTED GRADE LEVEL: 10 or 11

TASK/COMPETENCY SEQUENCE

1.1 Follow departmental policies
1.4 Identify occupational tasks
1.2 Perform safety procedures
1.3 Maintain a clean and orderly work area
1.5 Identify benefits and responsibilities of FFA membership
2.1 Identify duties of all officers in the FFA
2.5 Participate in a committee meeting
2.2 Deliver a speech
2.3 Participate in a panel discussion
2.4 Write a news release
3.1 Figure a bill of material from a drawing of a proposed building
3.3 Install electrical switches
3.4 Select an electric motor for a specific job
4.1 Interpret maps
3.5 Develop renovation plan
3.6 Operate a major farm machine
3.7 Construct a section of farm fence
3.8 Select planting and harvesting equipment
3.11 Select fuels and lubricants
3.22 Calibrate a sprayer
3.9 Identify welding safety equipment and practices
4.13 Plant crop
4.10 Identify seed samples
4.17 Identify disease control measures
4.26 Prepare a crop exhibit

5.4 Describe how agriculture and the ecosystem are interrelated
5.5 Describe how agriculture and the environment are interrelated
5.2 Describe the sources of water for home and industrial uses
5.3 List ways consumers use water
5.9 Describe the effects of water pollution on the environment
5.10 Select the best method to control water pollution
5.6 Describe effects of air pollution
5.1 Identify possible solutions to pollution problems
5.7 Identify common vegetation materials used for resource conservation
5.8 Identify practices to control soil erosion
5.23 Identify, tree species native to the region by their common names
5.24 Identify forest products
5.26 Calculate volume of pulpwood
5.27 Estimate the volume of standing timber on a given tract
5.16 Identify species of game, waterfowl, and fish
5.15 Develop a plan for feeding wildlife
5.17 Develop a plan for constructing a fish pond
5.34 Identify fire control measures
5.35 Prepare fire prevention publicity materials
6.3 Sterilize soil
6.1 Spread topsoil
6.2 Prepare compost
6.7 Plant annual flowers
6.8 Plant flower bulbs
6.14 Develop fertilization schedules
6.4 Add mulch to new seedlings
6.5 Inspect plants for insects
6.6 Remove weeds and grasses from flower bed
6.10 Select chemicals for a specific use
6.11 Apply chemical treatment to plants
6.12 Apply weed-killing compounds to lawns
6.13 Prune trees
7.6 Record personal and family goals
6.9 Wrap trees or shrubs to protect from weather
7.1 Prepare a family budget
7.3 Plan for the wise use of time
7.2 Conduct a safety survey
8.1 Establish farm financial goals
8.2 Develop plan for type and size of farm enterprise
8.8 Determine building insurance coverage
8.9 Determine liability insurance coverage
8.10 Transfer farm ownership
8.3 Plan a livestock program
8.4 Develop a plan for raising young stock
8.5 Contract for breeding services
8.6 Investigate livestock improvement programs

AGRICULTURAL PRODUCTION TECHNOLOGY (III) 8010

CONTENT OUTLINE			PERFORMANCE OBJECTIVE CODE
I.	ORIENTATION		
	A.	Departmental policies	P1.1
	B.	Safety procedures	P1.2
	C.	Maintenance procedures	P1.3
	D.	Occupational tasks	P1.4
	E.	FFA membership	P1.5
II.	LEADERSHIP SKILLS		
	A.	FFA officers	P2.1
	B.	Oral presentation	P2.2
	C.	Panel discussion	P2.3
	D.	News release	P2.4
	E.	Committee meeting	P2.5
III.	AGRICULTURAL MECHANICS		
	A.	Electrical systems	P3.3, P3.4
	B.	Construction plans	P3.1, P.3.5, P3.7
	C.	Farm equipment	P3.6, P3.8, P3.9, P3.11, P3.22
IV.	PLANT SCIENCE		
	A.	Map interpretation	P4.1
	B.	Disease control	P4.17
	C.	Growing crops	P4.10, P4.13
	D.	Crop exhibit	P4.26

V. NATURAL RESOURCES

A.	Relationship of agriculture and environment	P5.4, P5.5
B.	Pollution problems	P5.1, P5.6
C.	Water use	P5.2, P5.3
D.	Water pollution	P5.9, P5.10
E.	Soil conservation	P5.7, P5.8
F.	Government organizations	P5.11
G.	Wildlife management	P5.15, P5.16
H.	Pond construction	P5.17
I.	Forests	P5.23, P5.24, P5.26, P5.27
J.	Fire control	P5.34, P5.35

VI. LAWN MAINTENANCE

A.	Planting preparations	P6.1-P6.3
B.	Growing plants	P6.4, P6.7, P6.8, P6.14
C.	Disease/insect control	P6.5, P6.6, P6.10-P6.12
D.	Tree/shrub maintenance	P6.9, P6.13

VII. FAMILY RESOURCES

A.	Family budget	P7.1
B.	Personal/family goals	P7.6
C.	Safety survey	P7.2
D.	Use of time	P7.3

VIII. AGRICULTURAL BUSINESS

A.	Financial goals	P8.1
B.	Farm enterprise	P8.2
C.	Livestock program	P8.3, P8.4
D.	Breeding services contract	P8.5
E.	Livestock improvement	P8.6
F.	Insurance coverage	P8.8, P8.9

AGRICULTURAL PRODUCTION MANAGEMENT IV (8012)

COURSE DESCRIPTION: Agricultural Production Management (IV) is a one-year occupational course offered at the eleventh- or twelfth-grade levels. The course includes instruction in agricultural mechanics, with emphasis placed on the application of mechanical skills to farm power and machinery, soil and water management, supervised farming programs, and leadership training.

PREREQUISITE: Agricultural Production Technology III (8010)

SUGGESTED GRADE LEVEL: 11 or 12

TASK/COMPETENCY SEQUENCE

NOTE: Review of tasks in Duty Areas One and Two should be incorporated as needed; tasks from Task Analyses for Livestock Production should be added to this listing.

1.4 Identify occupational tasks
1.5 Identify benefits and responsibilities of FFA membership
3.1 Figure a bill of material from a drawing of a proposed building
3.3 Install electrical switches
3.4 Select an electric motor for a specific job
3.13 Install electrical controls on a motor
3.11 Select fuels and lubricants
3.16 Service diesel/gasoline fuel systems
3.2 Tune a tractor engine
3.6 Operate a major farm machine
3.7 Construct a section of farm fence
3.10 Develop a farm structure construction plan
3.12 Plan a farm service center
3.8 Select planting and harvesting equipment
3.14 Plan a farm water system
3.15 Assist with the installation of a farm water system
4.2 Prepare land use plan
4.5 Interpret soil test report
4.3 Plan a cropping program
4.19 Develop plan for purchase and operation of irrigation system
4.4 Determine feasibility of purchasing crop insurance
4.8 Develop plan for seed/plant needs
4.7 Determine the fertilizer needs for a crop
4.11 List the criteria used in hybrid seed corn selection
4.9 Develop plan for pesticide needs
4.12 Prepare seedbeds
4.14 Recommend crop management practices to improve volume of grain produced
4.16 Describe weed control measures

4.21 Identify types of grain damage
4.15 Plan a cultivation program
4.18 Develop crop marketing plan
4.22 Harvest crops
4.23 Dry grain
4.25 Determine weight loss incurred in drying grain
4.24 Prepare inventory of harvested crops
4.20 Develop a contract for providing custom crop services
4.6 Develop budget for changing a crop program
8.7 Complete farm rent/lease agreement
8.10 Transfer farm ownership
8.12 Develop livestock/livestock products marketing plan
8.11 Develop plan for livestock feeding program
8.13 Determine the feasibility of purchasing livestock insurance
8.21 Determine the feasibility of contracting for veterinary services
8.20 Reconcile bank statement with check register
8.14 Calculate depreciation
8.16 Calculate labor income
8.17 Calculate management income
8.18 Determine farm receipts and operating expenses
8.15 Calculate net worth of farm business
8.19 Complete a farm profit and loss statement
9.1 Identify poultry breeds
9.5 Describe poultry management practices
9.3 Plan a marketing program
9.2 Describe feeding practices
9.4 Develop a disease and parasite control plan
10.2 Identify beekeeping equipment and supplies
10.6 Develop a marketing plan
10.1 Select site for hive
10.3 Select honeybee stock
10.4 Determine feeding needs
10.5 Identify diseases, insects, and parasites
7.4 Develop a plan for community improvement
7.5 Prepare a plan for homestead improvement

AGRICULTURAL PRODUCTION MANAGEMENT IV (8012)

CONTENT OUTLINE	PERFORMANCE OBJECTIVE CODE
I. ORIENTATION	
A. Departmental policies for classroom procedures (review as needed)	P1.1-P1.3
B. Occupational tasks	P1.4
C. FFA membership	P1.5
II. AGRICULTURAL MECHANICS	
A. Electrical systems	P3.3, P3.4, P3.13
B. Construction plans	P3.1, P3.7, P3.10, P3.12
C. Irrigation systems	P3.14, P3.15
D. Farm equipment	P3.2, P3.6, P3.8, P3.9, P3.11, P3.16
III. PLANT SCIENCE	
A. Disease control	P4.9, P4.21
B. Planting preparations	P4.2, P4.3, P4.5, P4.8, P4.12, P4.18
C. Growing crops	P4.7, P4,11, P4.16, P4.19
D. Crop management	P4.4, P.4.6, P4.14, P4.20, P4.24
E. Crop cultivation	P4.15, P4.22, P4.23, P4.25
IV. FAMILY RESOURCES	
A. Community improvement	P7.4
B. Homestead improvement	P7.5

V. AGRICULTURAL BUSINESS

A.	Rent/leases agreements	P8.7
B.	Ownership transfer	P8.10
C.	Livestock feeding program	P8.11
D.	Livestock marketing plan	P8.12
E.	Livestock insurance	P8.13
F.	Financial calculations	P8.14-8.20
G.	Service contracts	P8.21, P8.22

VI. POULTRY

A.	Breeds	P9.1
B.	Feeding practices	P9.2
C.	Marketing plan	P9.3
D.	Disease/parasite control	P9.4
E.	Management	P9.5

VII. BEEKEEPING

A.	Site selection	P10.1
B.	Equipment and supplies	P10.2
C.	Honeybee stock	P10.3
D.	Feeding	P10.4
E.	Disease, insects, parasite control	P10.5
F.	Marketing plan	P10.6

OPERATING THE FARM BUSINESS V (8014)

COURSE DESCRIPTION: Operating the Farm Business (V) is a one-year occupational preparation course offered at the twelfth-grade level. Much of the instruction may be provided through individualized instruction. Emphasis is placed on establishment in farming, farm management, and occupational experience. Students receive instruction in adjusting, operating, and maintaining farm machinery and equipment and in planning and constructing farm buildings and facilities. Continued emphasis is placed on leadership training.

PREREQUISITE: Agricultural Production Management IV (8012)

SUGGESTED GRADE LEVEL: 12

TASK/COMPETENCY SEQUENCE

NOTE: Review of tasks in Duty Areas One and Two should be incorporated as needed; tasks from Task Analyses for Livestock Production should be added to this listing.

1.4 Identify occupational tasks
1.5 Identify benefits and responsibilities of FFA membership
3.4 Select an electric motor for a specific job
3.13 Install electrical controls on a motor
3.9 Identify welding safety equipment and practices
3.14 Plan a farm water system
3.15 Assist with the installation of a farm water system
3.16 Service diesel/gasoline fuel systems
3.21 Service the hydraulic system
3.19 Lubricate farm equipment
3.2 Tune a tractor engine
3.18 Repair machinery
3.17 Paint machinery
3.20 Prepare equipment for storage
3.5 Develop renovation plan
3.10 Develop a farm structure construction plan
3.12 Plan a farm service center
4.1 Interpret maps
4.17 Identify disease control measures
4.23 Dry grain
4.26 Prepare a crop exhibit
5.12 Develop a conservation plan
5.13 Interpret programs of soil conservation agencies
5.14 Estimate the water needs for a farm or natural resource enterprise
5.22 Develop wildlife management plan
5.20 Identify elements for maintenance of a marsh for wildlife habitat
5.21 Raise game birds
5.18 Develop recommendations for maintaining ponds

5.19 Determine proper stocking rate in pond
5.27 Estimate the volume of standing timber on a given tract
5.28 Develop tree fertilization plan
5.29 Identify regeneration techniques necessary for the continuous growth of trees
5.30 Design plans to establish forest roads
5.31 Develop a plan for the management of a forest
5.32 Plan a timber stand improvement project of planting, thinning, and pruning a stand of uneven-aged forests
5.33 Manage a forest harvesting plot
5.25 Develop plan to produce Christmas trees
5.34 Identify fire control measures
5.35 Prepare fire prevention publicity materials
8.23 Identify labor management procedures
8.28 Prepare farm payroll records
8.24 Develop budget for changing the livestock program
8.25 Develop an expansion plan
8.26 Complete federal income tax form
8.27 Complete state income tax form
8.29 Develop credit plan for the farm business
8.30 Develop a plan for bestowing the estate
9.1 Identify poultry breeds
9.5 Describe poultry management practices
9.3 Plan a marketing program
9.2 Describe feeding practices
9.4 Develop a disease and parasite control plan
10.2 Identify beekeeping equipment and supplies
10.6 Develop a marketing plan
10.1 Select site for hive
10.3 Select honeybee stock
10.4 Determine feeding needs
10.5 Identify diseases, insects, and parasites

OPERATING THE FARM BUSINESS V (8014)

CONTENT OUTLINE	PERFORMANCE OBJECTIVE CODE
I. ORIENTATION	
A. Departmental policies for classroom (review as needed)	P1.1-P1.3
B. Occupational tasks	P1.4
C. FFA membership	P1.5
II. AGRICULTURAL MECHANICS	
A. Electrical systems	P3.4, P3.13
B. Construction plans	P3.5, P3.10, P3.12
C. Irrigation systems	P3.14, P3.15
D. Farm equipment	P3.2, P3.16-P3.21
III. PLANT SCIENCE	
A. Map interpretation	P4.1
B. Disease control	P4.17
C. Crop cultivation	P4.23
D. Crop exhibit	P4.26
IV. NATURAL RESOURCES	
A. Water use	P5.14
B. Soil conservation	P5.12, P5.13
C. Pond maintenance	P5.18, P5.19
D. Wildlife management	P5.20-P5.22
E. Growing Christmas trees	P5.25
F. Timber management	P5.27-P5.33
G. Fire control	P5.34, P5.35

V. AGRICULTURAL BUSINESS

A.	Labor management	P8.23, P8.28
B.	Livestock program	P8.24
C.	Expansion plan	P8.25
D.	Tax records	P8.26, P8.27
E.	Credit plan	P8.29
F.	Bestowing estate	P8.30

VI. POULTRY

A.	Breeds	P9.1
B.	Feeding practices	P9.2
C.	Marketing plan	P9.3
D.	Disease/parasite control	P9.4
E.	Management	P9.5

VII. BEEKEEPING

A.	Site selection	P10.1
B.	Equipment and supplies	P10.2
C.	Honeybee stock	P10.3
D.	Feeding	P10.4
E.	Disease, insect, parasite control	P10.5
F.	Marketing plan	P10.6

APPENDICES

APPENDIX A: REFERENCES

APPENDIX B: TOOLS AND EQUIPMENT

APPENDIX C: AUDIOVISUAL SUPPLIERS

APPENDIX A

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Marketing Agricultural Products.
The Nursery Worker.
Seed Production of Corn, Soybeans, and Small Grains.
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Controlling Weeds.
Controlling Tree and Shrub Insects.
Corn Insects and Their Control.
Determining Credit Needs on the Farm.
Determining Probable Soil Losses in Conservation.
Factors Involved in The Borrowing Process.
Fertilizing and Watering Shade and Ornamental Trees.
Field Arrangement Principles.
Growing and Selling Christmas Trees.
Growing Flowering Annuals.
Hunger Signs in Crops.
Identifying Tree and Shrub Insects.
The Insect Identification Manual.
Nature of Soil Acidity and Major Plant Nutrients.
PH Test for Soil Acidity.
Planning the Cropping System.
Planning a Fertilizer Program.
Planning The Nitrogen Program.
Planning for Repayment of Loans.
Planting and Care of Farm Forests.
Pruning Shade Trees.
Sources of Farm Credit.
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APPENDIX B

TOOL AND EQUIPMENT LIST

Adjustable Metal Stands
Air Compressor
Anvil
Auger - PTO
AVR Tester
Awls
Battery Charger
Battery Charger Accessories
Battery Service Kits
Battery Starter Tester
Battery Testers
Bevels
Blade - Scraper
Branding Sets
Buckets
Bushing Inserter and Remover
Calipers
Cam Shaft Bearing Tools
Chain Hoist
Chisels
Cold Frames
Clamps (various)
Combination Analyzer
Compass, Surveying and Staff
Crane, Portable Hydraulic
Creeper
Cultivators
Current Indicator
Cutters (bolt, pipe, tubing)
Cyclone Spreader
Cylinder Sleeve Puller
Disk Harrows
Drain Pan
Drills
Drop Spreader
Dynamometer, Tractor PTO
Electric Clippers
Electric Groomer
Electrical Kits
Engine Analysis Test Equipment
Engine Repair Stand
Farm Level, Telescopic and Tripod
Files (various)
Flaring tool
Funnels
Greenhouse
Greenhouse Air Circulation System
Greenhouse Automatic Cooling System
Greenhouse Automatic Ventilation Equipment
Greenhouse Benches
Greenhouse Pot Moving Carts
Grinder, Compost
Guns (caulking, grease, soldering, staple, etc.)
Hammers (ball peen, claw, machinist's riveting, sledge, soft face, tack)
Heating Tables w/thermostats
Hive, Standard or all weather
Hoes
Hoist
Honey Extractor (Centrifugal)
Hose (garden, rubber)
Hot Beds
Hydraulic System Tester
Hydraulic Tester Accessories
Hydro-Flator
Ignition Simulator
Ignition Tester
Incandescent Photoperiod Lights
Ladder
Lathe House
Lawn Edger/Trimmers
Lawn Roller
Lawn Vacuum
Levels (surveyor, carpenter's, line)
Livestock Chute
Livestock Scale
Magnetic Ignition Analyzer
Mask Respirators w/cartridges
Micrometer
Mitre Box
Mobile Floor Jack
Oil Seal Installer
Oilers
Oscilloscope, Engine Analyzers
Paint Brushes
Pliers (various)
Planes (bench, block, jack)
Plows
Portable Floor Crane
Pullers, Bearing, Hydraulic Ram and Pump (set)

Saws (back, chain, compass, crosscut, hack, keyhole)
Screwdrivers (various)
Soldering Iron
Stud Remover
Surveying Chain
Tachometer
Testers, Combustion Analyzer
Testers, Vacuum Fuel Pump
Tie Rod Separator
Timing Light
Vaccinating Instruments (set)
Valve Refacing Lathe
Vises (drill press, machinist's, pipe, woodworking)
Welder (arc, oxygen-acetylene)
Welding Accessories
Wheelbarrows
Wrenches (various)

APPENDIX C

AUDIOVISUAL SUPPLIERS

American Association for Vocational Instructional Materials (AAVIM)
120 Driftmier Engineering Center
Athens, Georgia 30602

Future Farmers of America
National FFA Supply Service
5632 Mt. Vernon Memorial Highway
Alexandria, Virginia 22309

HOBAR Publications
1234 Teller Road
St. Paul, Minnesota 55112

Ohio Agricultural Education Curriculum Materials Service
2120 Fyffe Road
The Ohio State University
Columbus, Ohio 43210-1099

Singer Career Systems
80 Commerce Drive
Rochester, New York 14623

Virginia Cooperative Extension Service
Virginia Polytechnic Institute and State University
Blacksburg, Virginia 24061

Vocational Agriculture Service
College of Agriculture
University of Illinois
1401 South Maryland Drive
Urbana, Illinois 61801

Vocational Education Productions
California Polytechnic State University
San Luis Obispo, California 93407

Vocational Media Associates
Prentice Hall Media
Box 1050
Mount Kisco, New York 10549-9989

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